



IVY TECH

catalog 78-79





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INDIANA VOCATIONAL TECHNICAL COLLEGE CATALOG 77-78

Indiana Vocational Technical College is an equal opportunity/affirmative action state college and makes its education and employment decisions in a manner that will not discriminate against individuals on the basis of sex, race, color, creed or religion, national origin, physical or mental handicap, or age. Inquiries concerning the college's non-discrimination policies can be addressed to the Affirmative Action/Title IX Officer, P.O. Box 1763, Indianapolis, Indiana 46206, or by phone, 317-297-3210.

The education programs, descriptions of courses, regulations, and fees shown in this catalog are effective Fall, 1977. This publication and its provisions are not in any way a contract between the student and Indiana Vocational Technical College. The college reserves the right to revise any section or requirement at any time.

Published by Indiana Vocational Technical College, P.O. Box 1763, Indianapolis, Indiana, 46206. Telephone (317) 297-3210.

Indiana Vocational Technical College is an Equal Opportunity/Affirmative Action State College.

College Calendar

Fall 1977—Summer 1979

Fall Quarter, 1977

August 27-September 4.....	Registration and Counseling Inservice Faculty Training
September 5.....	Labor Day holiday
September 6.....	Classes begin
September 6-September 9.....	Late registration
November 18.....	Classes end

Winter Quarter, 1977-78

November 21-23.....	Registration and Counseling Inservice Faculty Training
November 24-25.....	Thanksgiving holidays
November 28.....	Classes begin
November 28-December 2.....	Late registration
December 18-January 2.....	Winter vacation
January 3.....	Classes begin
February 24.....	Classes end

Spring Quarter, 1978

February 28-March 3.....	Registration and Counseling Inservice Faculty Training
March 6.....	Classes begin
March 6-March 10.....	Late registration
May 19.....	Classes end
May 20-June 4.....	Spring vacation

Summer Quarter, 1978

May 22.....	Classes begin
June 5.....	Late registration
June 5-June 9.....	Independence Day holiday
July 4.....	Independence Day holiday
August 18.....	Classes end

Fall Quarter, 1978

August 28-September 1.....	Registration and Counseling Inservice Faculty Training
September 4.....	Labor Day holiday
September 5.....	Classes begin
September 5-September 8.....	Late registration
November 17.....	Classes end

Winter Quarter, 1978-79

November 20-22.....	Registration and Counseling Inservice Faculty Training
November 23-24.....	Thanksgiving holidays
November 27.....	Classes begin
November 27-December 1.....	Late registration
December 19-January 1.....	Winter vacation
January 2.....	Classes begin
February 23.....	Classes end

Spring Quarter, 1979

February 26-March 2.....	Registration and Counseling Inservice Faculty Training
March 5.....	Classes begin
March 5-March 9.....	Late registration
May 18.....	Classes end
May 19-June 3.....	Spring vacation

Summer Quarter, 1979

May 29.....	Classes begin
June 4.....	Late registration
June 4-June 8.....	Independence Day holiday
July 4.....	Independence Day holiday
August 10.....	Classes end

PROGRAM CHAIRMEN

Business Division

ACCOUNTING--Merrill Kissick
COMPUTER PROGRAMMING--Marvin Daugherty
HOTEL/MOTEL--Richard Laidlaw
INDUSTRIAL MANAGEMENT--Ron Wilson
MARKETING--Russ Bankert
SECRETARIAL--Dee Timmons
SECURITY & LOSS--Ron Wilson

Health Occupations

CLINICAL LAB--Jane Sumner
EMERGENCY CARE TECHNICIAN--Pete Magnant
MEDICAL ASSISTANT--MaryLou Etchison
OPERATING ROOM TECHNICIAN--
Florence Elmore
RADIOLOGY--Kay Morrison
RESPIRATORY THERAPY--Bob Eveslage

Trade & Technical Division

AGRICULTURAL EQUIPMENT--Dale Wicoff
ARCHITECTURAL DESIGN--Robert Laub
AUTO BODY REPAIR--Norman Tunison
AUTO SERVICE--Bob Howell
APPLIANCE REPAIR--Dean Harlow
ELECTRONICS--Steve Kuchler
HEATING & AIR CONDITIONING--Dean Harlow
INDUSTRIAL MAINTENANCE--Dick Purdy
DRAFTING--Robert Laub
TOOL ENGINEERING--Ed Mackell
INDUSTRIAL WASTEWATER--Randy Bryan
WELDING--Huey Calvain

Department Heads

BUSINESS DIVISION--Merrill Kissick
TRADE & TECHNICAL--Randy Bryan
MEDICAL DIVISION--Pete Magnant
L.R.C. DIVISION--Beverly Simone

Graphics & Media Division

LIBRARY RESOURCES AIDE--Susan Mannan

Skills Advancement Studies

COMMUNICATIONS--Carol Cashen
MATHEMATICS--Ken King
BASIC SCIENCES--Ken King
SOCIAL STUDIES--Carol Cashen

Special Programs

BUSINESS SCIENCE--Jim Simone
GRAPHICS & MEDIA--Beverly Simone
HEALTH OCCUPATIONS--Pete Magnant
NURSES AIDE--Phyllis Bayt
TRADE & TECHNICAL--Dick Purdy

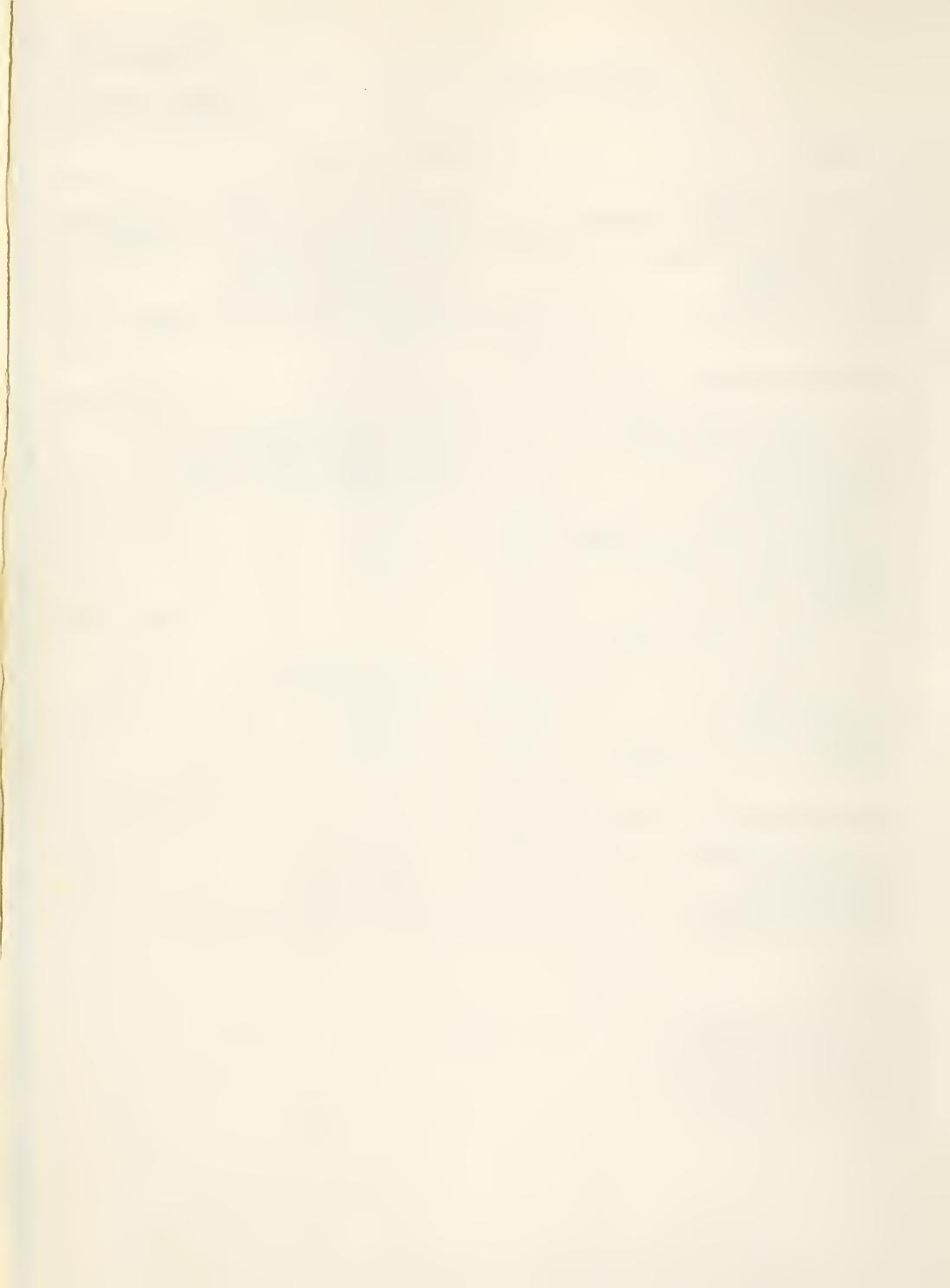


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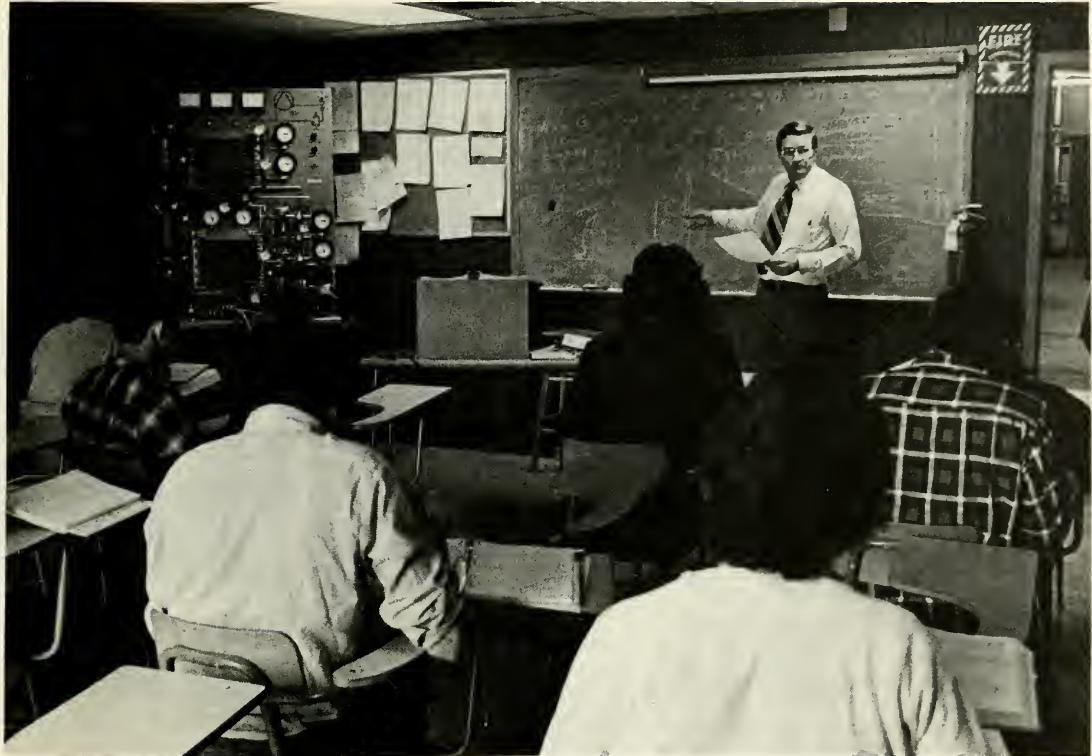
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you can learn a better living at IVY TECH

an overview

Ivy Tech offers the people of Indiana an opportunity to "Learn a Living."

The phrase "Learn a Living" is more than a slogan for Indiana Vocational Technical College. The three words represent a commitment, a statement of purpose, and an opportunity.

- Ivy Tech is committed to one type of education: practical technical training generally not available at the traditional college.
- Ivy Tech has one basic purpose: to provide the learning experiences that will help you improve your job skills.
- Ivy Tech offers an opportunity: you can prepare for the job you want in a short period of time.

The college was founded to provide job-oriented training.

Indiana Vocational Technical College, which has become popularly known as Ivy Tech, was created by the Indiana General Assembly in 1963. It was founded in response to a specific need: to match the employment needs of business and industry with qualified professionally trained employees.

Ivy Tech is a statewide educational system.

An 11-member State Board of Trustees, appointed by the governor, directs Ivy Tech. There are also 13 regional boards of trustees responsible for governing on the local level. The trustees represent the principal economic interests and geographic areas of the state.

Today, there are nearly 13,000 students enrolled in the 13 regions of Ivy Tech. Each region includes four or more counties, as outlined on the map below:

Naturally, each Ivy Tech regional institute varies in size and enrollment. The facilities at each institute, however, include classrooms, laboratories, workshops, Learning Resource Centers, counseling and administrative offices, snack bars, and lounges for students and faculty.

An important aspect of the programs Ivy Tech offers is the opportunity you'll have to get actual job training close to your home. Thus, the 13 institutes are supplemented by numerous other regional training sites. Courses throughout all 13 regions are taught in hospitals and medical facilities, public schools, business offices, union halls, and industrial plants. The result is that most Indiana residents live within at least 50 miles of one of Ivy Tech's educational facilities.



The Ivy Tech programs have earned a reputation of success.

Ivy Tech is Indiana's newest public, post-secondary school. But the college has, in a relatively short time, established itself as a quality institution. As a prospective student, you'll probably be interested in two particular areas of our record: the school's accreditation and the success of our graduates.

Ivy Tech is a member of the North Central Association of Colleges and Schools. Five regions have attained full accreditation and the other eight have been granted candidate status enroute to full accreditation. Ivy Tech's status with the North Central Association, together with the college's numerous professional affiliations, is more than a pat-on-the-back. It assures you that your program as well as the entire college, is meeting national standards and is recognized for its educational quality.

Our graduates are getting the jobs they seek.

Equally important as accreditation, however, is the success of Ivy Tech students after they complete their training. Ivy Tech recognizes that its students are not only looking for new job skills, but are also interested in jobs that will use those skills. And the success of our graduates has generally indicated that they are getting both the training and the work opportunities they want.

In a survey of the 1976 graduates of all Ivy Tech programs, we found that 92 percent of those who were available for employment had

obtained jobs soon after graduation. The majority of those graduates were working in the fields for which they had been trained.

The Ivy Tech curriculum can help you advance in your career.

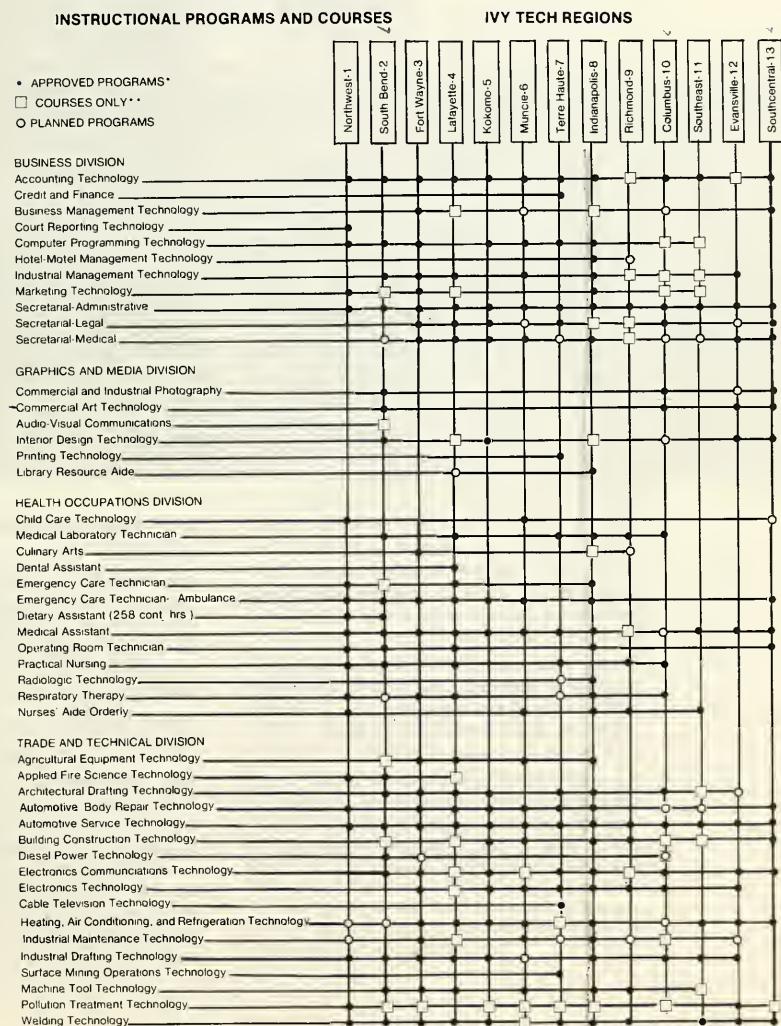
The curriculum at Ivy Tech is diverse so students can easily enter a training program, regardless of their previous education or work experience.

There's probably something at Ivy Tech for you, whether you are:

- * a recent high school graduate wanting to develop job skills

- * unemployed and wanting to learn a needed technical skill
- * a worker who wants to advance in a chosen career
- * looking for work after leaving high school
- * a college graduate in need of more training
- * a housewife who wants to re-enter the job market.

Over 45 programs are offered in the college's four divisions: Business Sciences, Graphics and Media, Health Occupations, and Trade and Technical. The chart below lists the programs and courses offered at the various Ivy Tech regional institutes:



You can meet your individual career goals through the college's programs.

Each of the four divisions at Ivy Tech offers a wide range of courses and programs on all levels so students can meet their individual goals. There are many entry points in each program, so you can begin training at your present level of competence and go as far in the program as you like. Your plans may involve only a few brush-up courses or a full associate degree, and this "career ladder" concept in the college curriculum means that you don't have to spend time backtracking. You can enter or leave the program for a job whenever you are ready.

In most Ivy Tech regions, the programs are offered on both a full- and part-time basis, so you can continue to earn a living while you're a student.

There are three levels of training you can enter at Ivy Tech.

If you need more than a couple of courses and you're looking for a complete program to get you started in a career field, Ivy Tech has three levels of training for you. All the programs concentrate on technical studies, but a student will also enroll in courses in communications, human relations, and mathematics and science. These courses will specifically relate to the requirements of each occupation. Thus, in addition to the technical expertise, students will have well-rounded skills to help them compete in today's job market.

Occupational Certificates are awarded for short-term organized programs of less than 45 credit hours. Some regions also award Certificates of Proficiency to recognize the successful completion of one or more courses.

Technical Certificate programs at Ivy Tech provide skills for a specific job. To earn a Technical Certificate, you will need at least 45 credit hours and will probably be in school from three to five quarters.

The Associate in Applied Sciences degree is the highest offered by the college. Students working toward the associate degree require a minimum of 90 credit hours and will be in school from six to eight quarters.

You may transfer credits earned at Ivy Tech if acceptable to another institution. However, Ivy Tech instruction is designed primarily to train you for a job — not to prepare you for transfer to another college or university.



Ivy Tech also offers non-credit activities.

Non-credit activities such as conferences and seminars offer you meaningful job related information in a relatively short time and at a low cost. As specialized activities, they are often specifically requested by Indiana employers to meet particular needs in industry or business.

At Ivy Tech, professionals provide training for students.

The people who will be teaching your classes at Ivy Tech are trained professionals in their fields. Many, of course, have advanced degrees; but more importantly, they have had on-the-job experience. At Ivy Tech, skilled commercial artists teach commercial art, experienced welders teach welding, and working nurses teach nursing. Most part-time instructors currently work in their trades, which



means the skills you learn from them are the skills they use in their every day professions. This assures you that the training you'll receive is much more than theory—it's the basic, practical application of theory you will need to be successful at your job. With an average ratio of only 15 students to each teacher—fewer than that in most lab courses—you will get to know your instructors as counselors and friends as well as teachers.

Ivy Tech's facilities are well-equipped for both your technical and non-technical studies.

Proper equipment and modern workshops and laboratories are two of the most essential features a technical college must provide its students. At Ivy Tech, this means that automotive mechanic students have access to the tools and equipment that will help them learn to troubleshoot and make repairs. For

nursing students, it requires the most up-to-date laboratories and learning aids. For business students, it means available typewriters, calculators, and computers. And for students interested in heating and air conditioning, it requires units that can be torn down and repaired as well as the proper tools and equipment to do the work. In brief, the college is committed to providing the proper facilities and equipment so you can learn job skills easier and faster.

Each Ivy Tech regional institute also has a Learning Resource Center (LRC) to help you. Each center is equipped with books, slides, films, and tapes that are always available to you. The college recognizes that each student learns and progresses at a different rate, and the LRC permits you to review work until you are sure of the material. An instructor is always nearby if you need assistance.

These learning labs at Ivy Tech are used for instruction in technical subjects as well as speed-reading, comprehension, writing, and mathematics. Any deficiency you may have in any of these areas can be overcome in the LRC as you continue to progress in other studies. The LRC also offers skills advancement courses for all programs at Ivy Tech. These self-paced courses let you enter at your level of proficiency and advance as rapidly and as far as you wish.



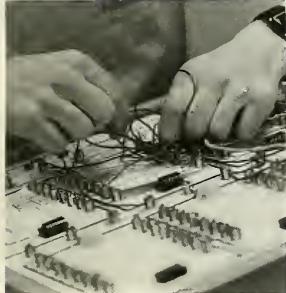
The college is prepared to help students both in and out of the classroom.

Ivy Tech recognizes that there are many areas of concern besides classroom and lab work that are important to students. To help you with some of these matters, each Ivy Tech regional institute has an Office of Student Services. Counseling services are offered, and there are evaluation services in skill, knowledge, and aptitude testing. The Financial Aid Office can help you locate funds to finance your training. Each region also has a Placement Office to help you find the job you want—either while you're still in school or after you've completed your course or program.

Because Ivy Tech's regional institutes and training centers are located throughout the state and easily accessible, most students commute to classes. Thus, the college does not provide dormitories or student housing. The Student Services Office at your regional institute can, however, provide information about local housing.

Students at Ivy Tech frequently find that their teachers not only serve as classroom instructors, but also become career counselors and advisors. Because so many faculty members are working in the fields students plan to enter, the teachers are able to offer advice and guidance about job requirements and employment opportunities.





Our doors are open to you at Ivy Tech.

Ivy Tech maintains an open admission policy. This means we will admit any person, regardless of sex, age, race, creed, religion, national origin, or physical or mental handicap, in accordance with applicable federal laws and regulations. If you're a resident of another state, you can also be admitted. A tuition fee is charged to non-Indiana residents, and they cannot displace an Indiana resident in a program at Ivy Tech.

Open admission also means that the college is open to people of all ages and backgrounds. The average age of an Ivy Tech student is around 29, but individuals studying at the college represent all age groups—from teenagers to senior citizens. The college is open to students who have permanently withdrawn from high school and are at least 16 years old. However, in such cases, Ivy Tech

does provide guidance and counseling and recommends the program of study that best meets the individual's objectives and needs. Students entering some programs may need to present a completed health examination form signed by a physician.

If you are undecided about your career plans and would like guidance in selecting specific training, Ivy Tech offers both counseling and testing to help you evaluate your interests and capabilities.

We welcome your application for admission.

The admission procedure at Ivy Tech is simple:

1. Select the program you want to study.
2. Fill out the Application For Admission.
3. Meet with a counselor to arrange the details and insure you meet any unique requirements of your enrollment.
4. Register for classes and arrange to pay the fees.

Entering college is not complicated at Ivy Tech. Our career counselors are available to help you with the admission procedure and will assist you with other details.

An Ivy Tech training program is not expensive.

Ivy Tech seeks to provide quality technical training at the lowest possible cost. Your fees will be based upon the number of credit hours you take during each quarter. A fee of \$12.60 will be charged for each credit hour you take. This includes a \$10 general fee, a \$2.25 ancillary fee, and up to \$.35 student activity fee. In addition you should plan for other expenses such as laboratory or shop fees, books, supplies, and a nominal accident insurance fee. If you're from out-of-state, you'll also have a tuition fee of \$10 per credit hour. These fees are subject to change, so be sure you discuss them with a counselor before you register.

You may qualify for financial aid at Ivy Tech.

We know you might need financial assistance to achieve your educational goals. Many students do, and it is the college's policy to assist as many qualified students as possible within available resources.

The types of financial aid available to you at Ivy Tech fall into three general categories: scholarships and grants, loans, and part-time employment. Frequently, students are offered assistance in a combination of types of aid—what we call a financial aid package. This packaging of aid assures that you won't be unduly burdened with a loan or work, and that scholarship and grant funds will be equally distributed.

Two federal grant programs are also available to Ivy Tech students: the Basic Educational Opportunity Grant (BEOG) and the Supplemental Educational Opportunity Grant (SEOG). Ivy Tech students can also receive scholarships and grants awarded through the State Student Assistance Commission.

Student loan programs include loans guaranteed by either the state or federal government and obtained from lenders in your hometown. Other small, short-term emergency loans are available through most regions to help you meet sudden, unexpected financial difficulties.

Students with financial need might qualify for part-time employment through the federally-funded College Work-Study Program. Jobs can be either for the college or in local non-profit agencies. The College Work-Study Program normally involves part-time work during the school year and sometimes offers full-time work during vacation and summer periods. Whenever possible, students are offered work opportunities in their career areas.

Additional kinds of financial aid you might qualify for include veterans and social security benefits. The Comprehensive Employment Training Act (CETA) and the Indiana State Board of Vocational Rehabilitation provide training costs and supportive services for Ivy Tech students who meet specific criteria established by each agency. For more information, you should contact the Financial Aid Officer at any Ivy Tech regional institute.

We'd like you to visit Ivy Tech.

We think the best way for you to get to know Ivy Tech is to visit us. We'd like you to personally see what we have to offer students who want to develop specific job and career skills. Stop at the regional institute nearest you, or call for an appointment. Ivy Tech career counselors will be happy to discuss programs and show you our facilities that are available to help you begin to "Learn a Living."



The College

**The College
College Goals
Regional Institutes
State Board of Trustees
Regional Boards of Trustees
College Administration**

The College



Indiana Vocational Technical College, or Ivy Tech as it has become known, is the state's newest public post-secondary educational institution. Established in 1963, Ivy Tech provides residents of Indiana with post-secondary occupational training of less than the baccalaureate level. Its training is specifically designed to develop occupational abilities leading to employment.

With its legislative authority to provide occupational education throughout the state, Ivy Tech offers a wide range of programs through a system of 13 administrative regions, each encompassing four or more counties, and collectively covering the entire state.

The college is governed by an 11-member State Board of Trustees appointed by the governor of the state. Members, by legislation, represent various economic interests: manufacturing, commerce,

labor, agriculture and the public-at-large. Seven member regional boards of trustees are appointed by the state board, with members representing the same economic interests. The state board appoints a president to administer the affairs of the college. Each region is administered by a vice president/dean who reports to the president.

Through this regional system the college keeps abreast of changing technology and the unique occupational training needs of local communities, the state, and nation. This enables the college to provide specific training opportunities from which students can gain definable job skills within their individual capabilities. The college curriculum also provides, as related education, the opportunity for students to strengthen and expand their abilities to cope with the complex dynamics of modern society.

The College Goals

Indiana Vocational Technical College believes that each individual, regardless of economic or social status, should be provided the opportunity to develop to society's ultimate benefit.

The college believes that post-secondary occupational education is an increasing necessity for an ever-growing portion of the citizens of Indiana. Ivy Tech demonstrates the intent of the General Assembly of the State of Indiana by providing occupational education through a coordinated system of regional institutes located throughout the state.

Indiana Vocational Technical College believes in technical and related education integrated as necessary throughout the occupational curriculum to enable students to develop self-awareness and social responsibility to successfully compete in a chosen occupational field.

The college believes in directing its programming to serve the needs of all individuals within their community as well as the needs of the community as a whole.

From this philosophical base, the following objectives are established for the Indiana Vocational Technical College system:

The State Board of Trustees formally adopted 10 goals for Indiana Vocational Technical College on March 14, 1974. They are:

- Consistent with the manpower needs of Indiana, the college will offer relevant occupationally-oriented, post-secondary education and training to develop its students to the desired level of competence.
- The college will offer occupationally-oriented, continuing education and training consistent with the identified needs of interested groups in the State of Indiana.

- Consistent with the individual student's interest, needs, and abilities, the college will offer a wide range of meaningful occupationally-oriented programs with multiple entry and exit opportunities in a continuum of education and training for each of its regions.
- The college will strive to provide the opportunity for citizens of the state to gain occupational competence regardless of their financial resources, previous educational experiences, or geographic location.
- The college will provide the opportunity for each applicant to gain occupational competence regardless of age, race, sex or religious affiliation.
- The college will encourage throughout the State of Indiana the development of understanding, acceptance and support for occupationally-oriented education and training and will communicate the valuable contribution it makes to the individual, community, state and nation.
- The college will prudently use all its resources to carry out its legislatively-mandated mission in an accountable manner.
- The college will provide within each program offering, educational and training experiences supportive of the social, cultural and personal development of the individual designed to enhance the opportunities for obtaining and retaining gainful employment.
- The college will cooperate and strive for coordination among all providers of occupationally-oriented training and education in all educational sectors, as appropriate.
- The college will continue to develop a dynamic and flexible delivery system capable of adapting its offerings to meet the changing technological and socioeconomic needs of the community, state and nation.

Regional Institutes

NORTHWEST - Region 1

1440 East 35th Avenue
Gary, Indiana 46409
Phone 219/981-1111

NORTHCENTRAL - Region 2

1534 West Sample Street
South Bend, Indiana 46619
Phone 219/289-7001

FORT WAYNE - Region 3

3800 North Anthony Boulevard
Fort Wayne, Indiana 46805
Phone 219/482-9171

LAFAYETTE - Region 4

616 Wabash Avenue
Lafayette, Indiana 47905
Phone 317/423-1533

KOKOMO - Region 5

1815 East Morgan Street
Kokomo, Indiana 46901
Phone 317/459-0561

MUNCIE - Region 6

4100 Cowan Road, P.O. Box 3100
Muncie, Indiana 47302
Phone 317/289-2291

TERRE HAUTE - Region 7

Rural Route 22, Box 760
Terre Haute, Indiana 47802
Phone 812/299-1121

INDIANAPOLIS - Region 8

1315 East Washington Street
Indianapolis, Indiana 46202
Phone 317/635-6100

RICHMOND - Region 9

2325 Chester Boulevard
P.O. Box 1145
Richmond, Indiana 47374
Phone 317/966-2656

COLUMBUS - Region 10

646 Franklin Street
Columbus, Indiana 47201
Phone 812/372-9925

SOUTHEAST - Region 11

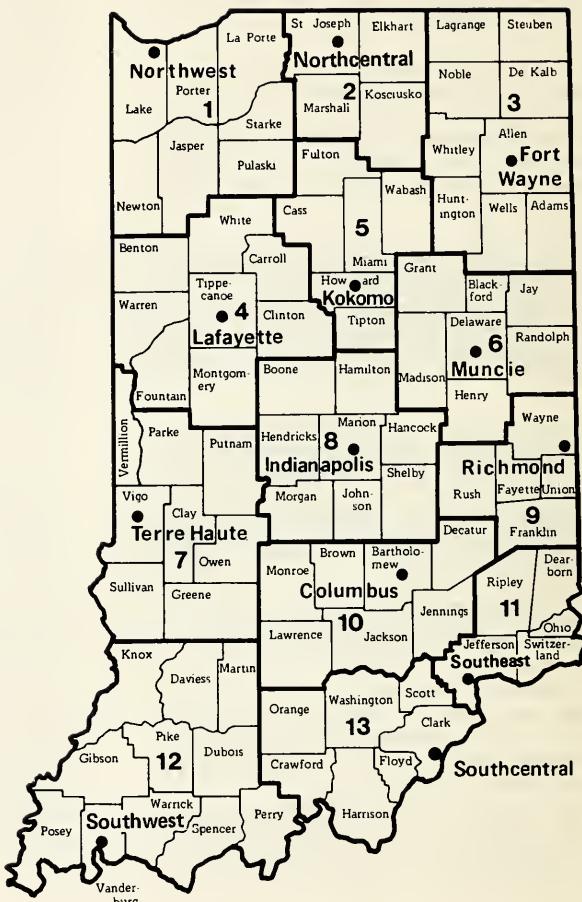
First and Broadway, P.O. Box 434
Madison, Indiana 47250
Phone 812/265-2580

SOUTHWEST - Region 12

3501 First Avenue
Evansville, Indiana 47710
Phone 812/426-2865

SOUTHCENTRAL - Region 13

8204 Highway 31 West
Sellersburg, Indiana 47172
Phone 812/246-3301



EXECUTIVE HEADQUARTERS

P.O. Box 1763
Indianapolis, Indiana 46206
Phone 317/297-3210

State Board of Trustees

(Appointed by the Governor)

Mr. John V. Barnett, chairperson

Commerce

President State Chamber of Commerce
Indianapolis, Indiana

Mrs. William F. McNagny, vice chairperson

Public-At-Large

Fort Wayne, Indiana

Mr. Wendell D. Vandivier, secretary

Labor

Coordinator

Carpenters' Joint Apprenticeship Committee
of Central and Western Indiana
Indianapolis, Indiana

Mr. Clifford K. Arden

Labor

Secretary/Treasurer
Indiana Conference of Teamsters
Evansville, Indiana

Mr. Maurice J. Ferriter

Commerce

Senior Vice President

National Division and
Public Affairs

Purdue National Bank
Lafayette, Indiana

Mrs. Guy E. Gross

Agriculture

Second Vice President
Indiana Farm Bureau, Inc.
Indianapolis, Indiana

Mr. Keith J. Holmes

Public-At-Large

President, Schultz Insurance Agency
Elkhart, Indiana

Mr. James B. Igleheart

Manufacturing

President, International Steel Company
Evansville, Indiana

Mr. William F. Justice

Agriculture

Farming

Logansport, Indiana

Mr. E. William Luzius

Manufacturing

Vice President, Arvin Industries, Inc.
Columbus, Indiana

Dr. Montague M. Oliver

Public-At-Large

Public School System of Gary
Gary, Indiana

Regional Boards of Trustees

(Appointed by the State Board of Trustees)

NORTHWEST REGION—1

Mr. Donald P. Belec, chairperson

Education

Mr. Andrew D. White, vice chairperson
Labor

Dr. Charles Comer, secretary
Commerce

Mr. John C. Aylesworth
Agriculture

Mr. Ware Edgar
Commerce

Mr. Theodore Nering
Education

Mr. Robert W. Sawyer
Commerce

NORTHCENTRAL REGION—2

Mrs. Philip T. Warner, chairperson
Agriculture

Mr. James A. Maurer, vice chairperson
Education

Mr. Stanley B. Smith, secretary
Manufacturing

Mr. Paul N. Campbell, Jr.
Commerce

Mr. Jesse L. Dickinson
Commerce

Mr. Stanley J. Ladd
Labor

Mr. John C. Wagner
Education

Mr. Robert E. Hall, Jr.
Commerce

Mr. Charles E. Kramer
Manufacturing

Mr. James E. Middleton
Education

Mr. Walter Niemantsverdriet, Jr.
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Mr. Gilbert Walker, vice chairperson
Labor

Mr. John R. Barkley, secretary-treasurer
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Mr. Donald J. Atwood
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Mr. Donald H. Heckard
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Mr. Max L. Hungerford
Education

Mr. Layman R. Peters
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Mr. John P. Edwards, secretary-treasurer
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Mrs. Charlotte Caldwell, secretary
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Mr. Reuben Dooley
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Mr. Dale Baker, vice chairperson
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Mr. Charles I. Sheets, secretary
Agriculture

Mr. Robert DeFrantz
Education

Mr. Robert P. Early
Commerce

Mr. John Ober
Commerce

Mr. D. Edward Yates
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Mr. Paul Patterson, vice chairperson
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Mr. John L. Hackleman, secretary-treasurer
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Mr. Everett M. Charles
Labor

Mr. Paul S. Hopwood
Education

Mr. Norman H. Johnson
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Mr. Charles Mosey
Manufacturing

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Manufacturing

Mr. Charles R. Hunterman, vice chairperson
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Mr. George Hollins, secretary
Manufacturing

Mr. James L. Schmalz, secretary-treasurer
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Mr. Wendell Stapp
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Mr. Charles A. Zebendon
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Commerce

Mr. Joseph C. Cepicka, vice chairperson
Manufacturing

Mr. Jerry Ferguson, secretary
Agriculture

Mr. James F. Helms
Education

Mr. Gene McCann
Commerce

Mr. Mervin D. Mahoney
Manufacturing

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Mrs. Otto H. Schnakenburg, secretary-treasurer
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Agriculture

Mr. Eugene C. Bradford
Labor

Mr. John T. Rumbach
Commerce

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Education

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Mr. G. Logan Dellinger
Agriculture

Mrs. Cora A. Jacobs
Commerce

Mr. Gerald E. Whitsitt
Manufacturing

Mr. Roger L. Windell
Education

College Administration

Glenn W. Sample, President	Alton V. Potts, Vice President/Dean Region 4-Lafayette	Dr. Norman W. Sievert, Vice President/Dean Region 9-Richmond
John T. Hatchett, Vice President/Treasurer	Dr. Jerry G. Solloway, Vice President/Dean Region 5-Kokomo	Harvey S. Poling, Jr. Vice President/Dean Region 10-Columbus
Richard P. Koch, Vice President/Operations	Gerald I. Lamkin, Vice President/Dean Region 6-Muncie	Homer B. Smith Vice President/Dean Region 11-Southeast
Dr. John J. Birdcell, Vice President/Dean Region 1-Northwest	Richard L. Davidson, Vice President/Dean Region 7-Terre Haute	George L. Utley, Vice President/Dean Region 12-Southwest
Walter N. Moore, Jr. Vice President/Dean Region 2-Northcentral	Warren F. Haas, Vice President/Dean Region 8-Indianapolis	Carl F. Scott, Vice President/Dean Region 13-Southcentral
Mearle R. Donica, Vice President/Dean Region 3-Fort Wayne		

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ADMISSION INFORMATION

Admission Policy

It is the policy of Indiana Vocational Technical College to provide open admission for the residents of the State of Indiana. The college provides for admission of any person regardless of race, color, creed or religion, national origin, sex, age or physical or mental handicap. Residents of other states may be admitted under the same policy provided they do not displace an Indiana resident.

With its "open door" admission policy, the college admits anyone above the usual high school age or who has permanently withdrawn from high school and is more than 16 years of age. The college reserves the right to guide the enrollment of students in a particular program or course on the basis of their prior academic records, vocational counseling, and testing.

General Admission Requirements

To be admitted to the college, students must meet one of the following criteria:

1. Be a high school graduate, or
2. Have successfully completed a high school equivalency examination, or
3. Have demonstrated an interest in and need for post-secondary occupational education as offered by the college.

To obtain full-time standing students must have on file with the college a completed application and, when the selected program requires it, a completed health examination form signed by a physician.

Admission Procedure

1. Select the program or course you want to study.
2. Fill out an application for admission.
3. Meet with a counselor to arrange the details and to insure any unique requirements are met.
4. Register for classes and arrange to pay the fees.

Procedures for Limiting Admission and Enrollment

Indiana Vocational Technical College (Ivy Tech) maintains an "open admission policy." However, the number of students a regional institute can admit to the college and enroll in programs and courses may be limited primarily by two factors; 1) financial resources; and 2) facilities which include available labs, equipment and related support. Most programs have prerequisites or entrance requirements in terms of basic skills and knowledge. However, these are factors more directly related to students' abilities to benefit from and succeed in the programs and career fields. They would not typically have a limiting effect

on admission and enrollment. Vice presidents are responsible for determining the capacity and standards of their respective regional institutes, any regional training center, and any program or course.

1. **Admission.** The process whereby a person is accepted as a student in the college. Admission precedes enrollment but does not necessarily entitle a person to be enrolled in any specific program or course.
2. **Enrollment.** The process following admission to the college whereby a student is accepted into a specific program or course.
3. **Prerequisites.** Established criteria which persons seeking enrollment in a specific program or course will be expected to satisfy as a condition of enrollment. Prerequisites are based on skills and knowledge basic to successful completion of a given program or course and subsequent employment including licensing.

Priority 1 & 2—Students in good standing previously admitted to the college seeking to enroll in a program or course who are residents of Indiana and secondly, those who are not residents of Indiana.

Priority 3 & 4—Other persons, including former students, seeking initially to be admitted or be re-admitted to the college and/or to be enrolled in a program or course who are residents of Indiana and secondly, those who are not residents of Indiana.

As an equal opportunity/affirmative action state college, Ivy Tech will not restrict admission or enrollment on the basis of race, creed, sex, age, national origin, or religion or physical or mental handicap. Whenever admission or enrollment must be limited and controlled, it will be based upon the priority group specified above and the date the application is accepted, first in—first served.

Transfer Students

Transfer students must meet general admission requirements.

Students can be admitted from other recognized colleges, universities and postsecondary institutions with credit awarded for completed courses as they apply to the program of study chosen at Indiana Vocational Technical College. Such students must present an official transcript from the previous institution attended. The college reserves the right either to refuse admission or conditionally accept students who have been dismissed for disciplinary reasons from other institutions.

Foreign Students

Foreign student applicants residing outside the United States must comply with the college admission policies. In addition, there are unique procedural requirements for foreign applicants. The regional Office of Student Services will provide additional information and assistance.

Student Testing

Students desiring assistance in making their career selection, can use the student guidance testing service. A fee is charged to cover the costs of the tests. The testing is designed and used for the guidance of students not selection for admission. Its purposes are:

1. To help students examine their interests and abilities in relation to the education options open to them so they can make informed plans for their courses and careers.
2. To provide counselors and faculty advisors with a profile of individual students to help them plan appropriate programs.
3. To analyze the student body and groups within it so the college can plan programs to meet their needs.

Registration and Late Registration

The official college calendar indicates the dates on which newly entering students are to register. Dates for registration of returning students will be publicized each quarter. Late registration will be permitted without constraint, other than payment of the \$5 late registration fee, for a period of one week following the beginning of a course for both full-time and part-time students.

Orientation

All new full-time students will participate in an orientation program prior to or during the first week of classes. The orientation is to assist students in making the transition to the college environment. Topics are discussed relating to student services, business office, instructional departments, and college policies and procedures. It also allows for scheduling of testing, interviews, or evaluations which are necessary to enroll students. Advisors will use the orientation period to determine program entry level and schedule classes for new students, if this has not been previously done.

Change of Schedule

Students can add courses to their schedules or change from one class to another up to the late registration deadline. If it becomes necessary for students to add and/or drop courses after late

registration arrangements must be made through the Office of Student Services.

Any administrative course changes carry no charge. Student-initiated course changes carry a charge of \$1 if they occur after the registration period.

Both added and dropped course changes must be processed through the Office of Student Services. Failure to complete the established procedure will nullify either action.

College Fees

The college seeks to provide quality training at the lowest possible cost; therefore, no tuition is charged students who are residents of the State of Indiana. All out-of-state students will remit a tuition fee in addition to the other fees. All tuition and fees are subject to change by action of the Indiana Vocational Technical College State Board of Trustees.

SCHEDULE OF FEES

(Per Quarter)

In-State Students (Both Full-Time and Part-Time)

<i>General Fee</i>	\$ 10.00 per credit
<i>Ancillary Fee</i>	\$ 2.25 per credit
<i>Student Activity Fee (maximum*)</i>	\$.35 per credit
Plus any applicable lab or shop fees	

Out-of-State Students (Both Full-Time and Part-Time)

<i>General Fee</i>	\$ 10.00 per credit
<i>Ancillary Fee</i>	\$ 2.25 per credit
<i>Student Activity Fee (maximum*)</i>	\$.35 per credit
<i>Tuition</i>	\$ 10.00 per credit
Plus any applicable lab or shop fees	

*The actual Student Activity fee for each regional institute is established by its Regional Board of Trustees. This fee will not exceed \$.35 per credit for all students.

Miscellaneous Fees—All Students

Ancillary Fees

Ancillary Fees are assessed to cover the cost of developing college facilities.

Student Accident Insurance Fee

Each student shall be charged \$.55 per quarter when enrolled full-time and \$.25 per quarter when enrolled part-time to cover the premium cost of student accident insurance.

Laboratory/Shop Fees

Students are charged lab or shop fees for certain courses to cover the cost of consumable supplies and materials.

Additional Expenses

The optional Comparative Guidance and Placement Program administered by the college carries a \$5 charge.

A \$10 Graduation Fee will be charged to students applying for graduation. This usually occurs at the beginning of the final quarter. This fee is to cover costs incurred in processing diplomas and preparing for the graduation ceremony. It must be paid before the college will process a diploma.

A change in schedule (drop/add) requires a \$1 fee.

A \$ 5 late registration fee is charged students not completing registration during the assigned period.

The following expenses also apply depending upon the areas of study and the requirements of each course. For more information contact the Office of Student Services.

Books:

All students are expected to purchase text books required for the course in which they are enrolled. The cost of books will vary depending on the program and the average is about \$30 to \$40 per quarter.

Tools:

The college furnishes major equipment items for instruction; however, in many programs or courses students must furnish additional tools and equipment.

Uniforms and other special equipment:

Several programs require students to furnish uniforms, special clothing, or equipment for participation in the laboratory areas.

Payment of College Expenses

Students are expected to make arrangements on the day of registration to pay all applicable tuition and fees. In some cases, arrangements can be made for the payment to be deferred. If there is a need for this service, arrangements must be made before registration with the regional Business Office. There may be an additional fee for this service.

Refund of Fees—General College Policy

Refund policies for credit courses, as specified below, pertain to all fees assessed at registration. The effective date for calculating the refund will be the date a student submits written notification for official withdrawal to the Office of Student Services. Special refund policies may be applicable to specific categories of students for designated regional institutes.

Withdrawal from College

First Week: If a registered student withdraws after registration, but before the end of the first week of classes, the college will retain \$20 and refund all other paid fees.

Second Week: If a student withdraws during the second week of classes, the college will retain 50% of total fees assessed or \$20, whichever is larger, and refund all other fees paid.

Thereafter: No refunds will be made.

Upon withdrawal from the college within the two-week refund period, deferred fees will be cancelled.

Withdrawal From Individual Courses

During the first week or until late registration ends (whichever is later) 100% of the fees assessed and paid for the course being dropped will be refunded.

Thereafter, no refunds will be made.

Refunds for Cancellation of a Course

The college will void outstanding obligations related specifically to courses cancelled by action of the college and will refund 100% of monies collected toward registration in such courses.

Refund of Fees—Veterans

The college certifies that the refund policy applicable to veterans, war orphans, wives and widowed students for Ivy Tech regions who are Candidates for Accreditations, is in accordance with Section 1776 (C) (13) Title 38, U.S. Code. A refund of the unused portion of tuition, fees, and other charges will be made to veterans or eligible persons who fail to enter or complete the course as required by Veterans Administration regulations. The refund will be within 10% of an exact pro rata refund. No more than \$10 of the established registration fee will be retained if a veteran or eligible person fails to enter the course. Regional Offices of Student Services will assist with forms and procedures.

FINANCIAL AID

The college recognizes that many students may need financial assistance if they are to achieve their educational objectives. Therefore, it is the policy of the college to aid as many qualified students as possible who have demonstrated financial need. The Financial Aid Officer in each Office of Student Services administers many student aid programs.

The college draws financial resources chiefly from three sources: the institution itself, the State of Indiana and the federal government.

To assist in the equitable distribution of these resources and to comply with governmental regulations the college uses an objective needs analysis system operated by the College Scholarship Service (CSS). The college subscribes to the principle that financial aid should be awarded to students on the basis of their need. CSS provides a confidential statement—the Financial Aid Form (FAF)—to help the college assess the financial strength of students and their families. On the basis of the data supplied by the FAF, the

Financial Aid Officer can evaluate the amount of financial aid needed to meet the students' needs and the kinds of aid that can be provided.

The kinds or types of financial aid fall into three general categories:

(1) Scholarships and grants, (2) Loans, (3) Part-time employment. Usually students are offered assistance from more than one kind of aid so that in meeting their need the Financial Aid Officer prepares a "financial aid package." This approach insures that no student will be unduly burdened with a loan or work and that scholarships and grant funds will be equitably distributed.

The college participates in several financial aid programs for which the Financial Aid Officer in each region's Office of Student Services has complete details.

Requirements for Financial Aid

Students receiving financial aid are expected to make satisfactory progress toward completing their program of approved courses. Satisfactory progress means academic status as well as achieving a minimum number of credits each quarter based on students' enrollment status (and aid level) at the beginning of the quarter. The following chart illustrates this policy:

enrollment status	number credits for which registered	minimum credits which must be completed
Full-time	12 or more	12
3/4 time	9-11	9
1/2 time	6-8	6
Less than 1/2 time	1-5	Not eligible for some aid programs

Hence, financial aid recipients must earn the minimum number of credits with computable grades (A, B, C, D) identifying satisfactory progress consistent with their enrollment status.

Financial aid recipients who do not make satisfactory progress in any quarter will be placed in the probationary status (see procedure under Standards of Progress) during the following quarter. When this occurs, students will be advised by the financial aid officer that aid is conditional and could be reduced or discontinued if satisfactory progress is not reestablished by the end of the probationary quarter. Some agencies require repayment by students for that portion of aid received but not earned in minimum credits relative to enrollment status. Students whose financial aid has been reduced or cancelled due to unsatisfactory progress can request reinstatement

upon completion of one quarter of satisfactory progress.

Financial aid is renewable up to the point recipients have completed the total number of credit hours in approved courses required for their specific program objective.

The financial aid officer will provide aid recipients with detailed information, standards and regulations for each aid program.

SCHOLARSHIPS AND GRANTS

Many scholarships and grants are available through the college. In many cases these are highly individualized because of the source of the funds or purposes of the award. The amount of these awards varies in each regional institute.

State Scholarships and Grants

Ivy Tech students can qualify for both state scholarships and state grants. A single application for both programs can be obtained from a high school guidance office or a regional institute's Office of Student Services. Recipients of state scholarships, identified as Hoosier Scholars, are selected on the basis of academic achievement and financial need. Candidates must take the Scholastic Aptitude Test (SAT) no later than December of their senior year in high school and file the scholarship application by December 1 of the year preceding enrollment in the fall quarter. Candidates must also file the FAF by February 1.

The application deadline for the state grant program is March 1 of the year preceding enrollment in the fall quarter. The SAT is not required for the state grant program. Eligibility is based on demonstrated financial need and, therefore, the FAF must also be filed. The deadline for the FAF is March 1.

Child of Disabled Veteran

Children of veterans with a service connected disability or death may qualify for the waiver of certain institutional fees. Eligibility for this aid must be certified by the Veterans Administration.

Police and Firemen Orphans

Children of regular paid law enforcement officers and firemen killed in the line of duty may qualify for the waiver of certain institutional fees. This fee waiver is applicable only to full-time students under the age of 23. Eligibility for this aid must be certified by the appropriate agency.

Basic Educational Opportunity Grants (BEOG)

The BEOG program provides assistance to eligible students enrolled in approved programs in accredited post-secondary institutions throughout the nation. Ivy Tech students enrolled at least half-time in a program leading to a technical certificate or associate degree may be considered for BEOG. Applications may be obtained from any high school guidance office or the regional Office of Student Services. BEOG awards range from \$200 to \$1400; individual awards are determined by the student's eligibility index and the cost of education at a given institution.

Supplemental Education Opportunity Grants (SEOG)

The SEOG program is directed to high school graduates with exceptional financial need. Eligibility for this program is determined by the regional Financial Aid Officer and the FAF is required. SEOG awards range from \$200 to \$1500 but may not exceed one-half the student's need. The college must match the SEOG with other forms of acceptable aid, usually other grants or part-time employment. To be considered for an SEOG, a student must be enrolled at least half-time.

Indiana State Guaranteed Loan Program

The 1977 Indiana General Assembly enacted a state guaranteed loan program to go into effect after January 1, 1978. This program is conducted through local, home-town lending institutions, banks, savings and loan associations, credit unions, etc. The college will certify the student's enrollment and cost of attendance. If the adjusted income (after taxes) of the student and his family is under \$25,000, the federal government will pay the interest on the loan while the borrower is in school. The State of Indiana will provide the guarantee to the lender in the event of a default. After leaving school the student assumes repayment of the loan with a maximum of 7% simple interest being charged.

Other Loans

Small, short-term, emergency, interest-free loans are provided through the Ivy Tech Foundation and available at the regional institutes. These limited monies are intended to cover unanticipated expenses which may occur at the time of registration or during the term. They are negotiated through each region's Office of Student Services.

College Work-Study Program

Students with demonstrated financial need based on the FAF may qualify for this federal program. Eligible students may be employed part-time while they are attending classes and full-time during vacation periods. Work-study jobs may be within the college or in any public or nonprofit agency in the community. The hours per week and the pay rate are determined by the regional Financial Aid Officer. Whenever possible students are offered work-study opportunities in areas related to their career objectives.

Other Employment

The college makes every effort to develop and maintain a list of job opportunities in the community. Information about employment is available in the Office of Student Services in each region.

OTHER TYPES OF FINANCIAL AID

Veteran's Benefits

Students who are veterans of military service may apply for a Certificate of Eligibility from the regional office of the Veterans Administration. Monthly V.A. benefits can be used at all regional institutes. Application for these benefits should be made at least thirty days in advance of enrollment.

Other educational benefits are extended to orphans of veterans and to the vocational rehabilitation of veterans. These programs are administered by the regional office of the Veterans Administration, and further information can be obtained there.

Social Security Benefits

Monthly social security benefits are available to students when one or both parents receive social security disability or retirement benefits or when a parent covered by social security dies. Educational benefits may be extended to eligible students up to the age of 22. Eligibility is determined by the Social Security Administration, and further information can be obtained from their local office.

Comprehensive Employment Training Act (CETA)

Assistance in obtaining vocational training is an option available to students from economically disadvantaged backgrounds under Title I of the Comprehensive Employment & Training Act of 1973. Eligibility for this program is determined by local CETA program

operators. Students interested in this program can obtain appropriate referral information from the regional Office of Student Services.

Vocational Rehabilitation

Students with disabilities which may be considered handicaps to employment can qualify for monthly benefits through the Indiana State Board of Vocational Rehabilitation. Conditions of eligibility are established by the board and awards based on individual needs are made by the local Office of Vocational Rehabilitation.

For more detailed information about any of the Financial Aid programs described above, contact the Financial Aid Officer in the Office of Student Services.

STUDENT ATTENDANCE

Attendance at scheduled class meetings or other activities assigned as part of a course of instruction is essential. Accordingly, instructors are responsible to enforce attendance policies, maintain attendance records, and to excuse students only for bona fide reasons. This procedure is necessary to insure student achievement to maintain morale and to maintain the integrity of program quality, financial aid, veteran's benefits, special funding, etc.

Occasionally personal circumstances can arise which render it impossible for students to attend scheduled classes and activities. Whenever such circumstances can be anticipated, the college expects students to confer with instructors to obtain authorization for absence. Such advance notification provides the opportunity for instructors to offer the students the option of making up the material missed. In case of unforeseen circumstances, students should also consult with their instructors to arrange for make-up. Excused absences consist of illness or any reasonable family, occupational or other circumstance. Unexcused absences are those which normally cannot be justified by any logical reason or when the students make no effort to confer about their absence with the instructors.

Whenever a student is absent and unexcused for such absence for 5 consecutive meetings of a scheduled class or activity or 10 consecutive hours (whichever comes first), the instructor will make a reasonable effort to determine whether the student intends to return to class. For students who apparently intend not to return to class, the instructor will annotate the attendance records accordingly and will forward in writing a request that the student be withdrawn from class. The director of student services will notify students prior to such action.

Whenever students' accumulated absences exceed

20% of the total quarterly class time, it is likely to adversely affect their abilities to successfully progress in their courses or achieve the competencies and performances required. Such absences can result in the students being withdrawn from their courses or programs.

ACADEMIC GRADING PROCEDURE AND STANDARDS OF STUDENT PROGRESS

General:

The academic grading system consists of grades and status. Grades reflect the quality of performance and achievement of competency by students who complete a course. Status is a condition for which no quality points are assigned. Instructors are responsible for determining and assigning both grades and status based on objective appraisal and evaluation of students' performances. Grades and status assignments are summarized, reviewed, and analyzed at the course, program, division, region, and college-wide levels. Students receive quarterly reports of their grades and status.

Grades and Status:

GRADES	INTERPRETATION	QUALITY POINTS PER CREDIT
A	Superior	4
B	Above Average	3
C	Average	2
D	Below Average	1
F	Unsatisfactory	0

STATUS		
IP	In Progress	Not Computed
I	Incomplete	Not Computed
W	Withdrawal	Not Computed
AU	Audit	Not Computed
S	Satisfactory	Not Computed

Status Conditions:

The following status conditions along with grades constitute all possible dispositions. An intermediate status must be converted to a grade within a specified time period. Quality points are not applicable and are not computed for any status condition.

IP - In Progress:

This intermediate status is applicable *only* to courses that are entirely individualized or to courses open to enrollment anytime during a given quarter. Students can be assigned an IP status when, at the end of any college quarter, they have not completed such courses and will continue course work into the next quarter. Such course work should be completed with

a grade awarded within a time span comparable to that for regularly scheduled college activity unless otherwise authorized by the director of instruction. Care should be exercised to avoid a work overload in the subsequent quarter or jeopardizing financial aid.

I - Incomplete:

This intermediate status is assigned only when students: 1) have not completed final examinations, or; 2) have not completed certain other course requirements, *and* arrangements have been made with the instructor to complete the unfinished work. Each instructor is responsible for assigning the time period in which the final test or course work is to be completed. This should not exceed 30 days following the end of the quarter for which the incomplete status was assigned unless authorized in writing by the director of instruction. Students who do not make such arrangements will be assigned a grade appropriate to the work partially completed.

W - Withdrawal:

Withdrawal is a terminal status. Students can voluntarily withdraw from courses (following the end of the fee refund period) up to end of the sixth week without the instructor's approval. Thereafter, the instructor's approval is required. Should an instructor refuse to approve a request for voluntary withdrawal, the student will be assigned a grade commensurate with the course work accomplished. Instructors with approval of their director of instruction can withdraw students for excessive absence or under extenuating circumstances such as an accident. Students will be notified prior to such action.

AU - Audit:

Students enrolling in courses for "audit" will pay the same fees as students enrolled for credit. An audit carries no grade or credit.

S - Satisfactory:

Credit for courses may be granted on the basis of examination and/or evaluation of work experience and previous education.

Credit:

Credit is a term used to describe the relative value of an instructional course or experience. It is awarded at the completion of the course. Credit is based on the demands of the learning situation and a formula based on the number of contact hours contained in the course.

Normal Load:

Most Ivy Tech programs generally reflect an average of 15 to 16 credits per quarter. A course load above 20 credits per quarter requires special approval from the director of instruction. Students carrying a minimum of 12 credits are designated as full-time for various reporting and classification purposes.

Quality Point:

A quality point is a numerical value assigned to the grades students receive in credit courses to provide a quantitative determination of their learning efforts. The quality points for a course are equal to the grade point value times the number of credits.

Cumulative Grade Point Index:

The cumulative grade point index is a measure of a student's learning success in those courses that relate and contribute to the approved educational objectives of the student. It is obtained by dividing the total number of quality points earned by the total number of credits attempted in approved courses. The grade point index is calculated to three decimal places. The cumulative grade point index will reflect only the highest grade achieved in any course that a student may have taken more than once. Also, in such cases the number of credits attempted will apply only to the course for which the highest grade was made.

Final Examination:

A final examination can be required for students to complete a course and receive a grade. Absence from a scheduled final examination, with the privilege of a make-up examination, must be arranged with the instructor.

Improving a Grade:

Students, with the approval of their faculty advisors, can attempt to improve grades by repeating courses. Financial aid recipients, however, should carefully review their situations since payment for repeated courses can be disallowed. Permanent student records contain complete files of all activity. The cumulative grade point index will reflect only the highest grade received.

Standards of Progress:

- a. Students are expected to maintain a minimum cumulative grade point index of 2.0 calculated on the basis of: (1) those courses which contribute to the requirements of an approved certificate or degree program; or, (2) those courses which are

directly related to the educational/career objectives of the student as approved by the regional director of instruction.

- b. In order to qualify for graduation, students must have a minimum cumulative grade point average of 2.0
- c. The academic progress of all students will be reviewed by the director of student services within 30 days following the end of each quarter.
- d. Students who do not maintain a cumulative grade point average of 2.0 or at least a 2.0 average for any quarter will be placed on academic probation. This will result in the following actions:
 - (1) These students will be advised in writing by the regional directors of student services of being placed on probation. These students are required to appear for a conference within two weeks.
 - (2) These students will be advised by their faculty advisors (and aid recipients by the financial aid office) about the consequences of unsatisfactory progress in terms of their educational and occupational objectives and compliance with the standards of progress. Every effort will be made to discover and correct the conditions, circumstances, and problems that appear to be affecting the students' abilities to pursue their courses satisfactorily.
- A record of such conference will be prepared and maintained in the students' permanent record files.
- (3) Academic probation can result in:
 - (a) Required attendance at special counseling sessions.
 - (b) Required remedial courses.
 - (c) Limited or reduced course load.
 - (d) Exclusion from further registration for one quarter based on the recommendation of the faculty advisor and student status committee with approval of the vice president/dean.
 - (e) Reduction or disqualification for continued financial assistance based upon entitlement requirements specified by the agency providing the financial assistance.
 - (f) Disqualification for graduation.
- (4) Students are removed from probation when satisfactory progress is reestablished.

Special Problems

Special problems, exceptions, and grievances are the responsibility of the vice president/dean of the respective region and designated staff and committees.

PLACEMENT

The administration believes assistance in placing graduates is an integral function of the college. Consequently the college has established regional placement offices to serve its students and graduates. Students interested in placement assistance should contact the regional Office of Student Services for employment data and job prospects in their chosen areas of study.

Employment opportunities known to the regional college placement office are available to all students who have registered with the office. Any students registered with the placement office can be interviewed by all prospective employers. Employers registering with the office are provided the names of all qualified candidates for employment without regard to sex, race, age, national origin, creed or religion; or physical or mental handicap.

All candidates for graduation will be contacted by the regional Office of Student Services regarding placement assistance. This activity should take place during the final quarter in which students are enrolled prior to graduation.

Students expecting to graduate should contact the regional Office of Student Services which will:

- (1) Explain the placement services of the college.
- (2) Distribute forms to register with the placement service. The form should include an explanation by those students who elect not to register for placement assistance.
- (3) Assist candidates for graduation in preparing a credentials packet to use in finding a job. This packet should include:
 - (a) Personal resume giving family background, educational experiences, employment record, etc.
 - (b) Identification of persons who can be contacted for personal reference regarding the candidate.
 - (c) Handout materials which will aid the candidate in gaining initial employment.
- (4) Create folders for all candidates who register with the placement service. Original copies of candidate's credentials will be filed in these folders.
- (5) Prepare copies of credentials released by the candidates for referral to prospective employers. Alumni can update their credentials whenever they wish to use the placement service.

HOUSING

Indiana Vocational Technical College does not have any dormitories. Out-of-town students needing accommodations should contact the regional Office of Student Services for information about local housing.

STUDENT ORGANIZATIONS

Extra-curricular activities complement the academic program of the institution. The college encourages students to participate in student activities as long as it does not interfere with their studies. All student organizations must operate under the policies and guidelines set for the college by the State Board of Trustees. No student organizations will be permitted to function in college facilities without approval of the administration and the student senate. All approved organizations must be open to all eligible persons for membership and must make available to the student senate records of officers, membership, and financial transactions.

Student Senate

Students have organized student senates to establish a system of participation in the student government and to increase the spirit and reputation of the college. Student senates are authorized to legislate on subjects concerning student affairs, unless regulations have been otherwise delineated, subject to the approval of the appropriate college administrative office.

Constitutions of all student organizations must be approved by a quorum. A quorum is a simple majority of the total membership and one faculty advisor.

Committee on Student Status

Grievances of students as to discipline and academic status may be heard by this committee. The committee is composed of at least two instructional staff members, two students designated by the student senate, and two administrative persons and will make recommendations relating to the disciplinary or academic status of students.

Class Organizations

Each class, first and second year, may elect a class president, vice-president, secretary-treasurer, class reporter, and the at-large representatives for the student senate. Class organizations will be sponsored by the student senate, and their primary purpose is for class-wide social activities and sports functions. The election of class offices will be held during the first three weeks of each fall quarter. Each class will have a faculty advisor appointed by the college.

Clubs

Hobby, social, or interest clubs can be organized and will be chartered by the student senate with the approval of the administration. Clubs will have the

following elected officers: president, vice-president, secretary-treasurer, club reporter, and a representative to the student senate. All clubs will have a faculty advisor. The student senate will determine if sufficient interest exists to form or to continue a club.

Intramural Sports

Sports activities of the college consist only of intramural sports sponsored by the student senate. Leagues can be formed where the interests of the students justify their organization.

Social Activities

All group activities of the college must be approved and sponsored by the student senate and the administration. Classes, clubs, and other groups should plan and conduct social activities for their members, while the student senate organizes and conducts school-wide social activities and gatherings. All students and their guests may participate in these activities.

Professional and Trade Societies

Student chapters of the various societies will be formed on the same basis and under the same requirements as other student organizations.

GENERAL INFORMATION

Bookstore

The college maintains bookstores in each region to make available the books and supplies needed by students throughout the academic year. All books and regular supplies needed for training will be for sale at the bookstore. When special supplies are needed which are specifically related to requirements in a course they will be provided as part of the laboratory or shop fees.

College Colors

The College colors are blue and gold.

Office Hours

Except for Saturdays, Sundays, and holidays, the offices of the college are open during normal office hours. These office hours, however, can vary from region to region.

Personal Property

The college cannot be responsible for personal

property. For their protection, students should mark or identify each item of personal property.

Messages

The college office cannot accept or deliver personal messages or telephone calls for students except in cases of extreme emergency.

FACULTY

A quality faculty serves each regional institute. In selecting its faculty, the college places considerable emphasis on its instructor's actual experience in the areas of technical specialization, academic achievement, and ability to communicate. Faculty members maintain their professional status by keeping informed on current trends in their fields.

AFFILIATION AND ACCREDITATION

Indiana Vocational Technical College is a member of the Indiana Conference for Higher Education, the American Association of Community and Junior Colleges, the Indiana Association of College Admissions Counselors, and the Indiana Student Financial Aid Association.

The college is approved for the education of veterans and orphans of deceased veterans who are eligible for educational benefits. The college is endorsed by the Rehabilitation Division of the State of Indiana.

Courses and programs for each occupational area of concentration are approved where applicable by appropriate certifying agencies, as well as by business, labor and industrial organizations.

All of Indiana Vocational Technical College's regional institutes have achieved either Candidate for Accreditation status or full Accreditation with the North Central Association of Colleges and Schools.

Additional information on accreditation can be obtained from the Office of Student Services at each regional institute. Accreditation does not insure transferability of credits to other institutions. Indeed, Ivy Tech courses and programs are designed to help students get jobs not to transfer to other institutions. However, students interested in transferring to another institution should contact that institution for information concerning evaluation and transferring of credit.

COUNSELING SERVICES

the Office of Student Services in each region offers counseling services to all students. Counseling is a method of helping students resolve their educational, social, personal and vocational problems. The purpose

of this service is to aid students in accepting the responsibility of making their own decisions.

A system of academic advisors enhances this counseling. Students may feel more secure when relating specific problems to an advisor who is also a familiar instructor. When necessary, academic advisors can refer their students to the Office of Student Services for further counseling.

GRADUATION

Matriculated Student

A student is considered to be matriculated when: (1) an intention has been stated to pursue a certificate or degree in a program, (2) admission requirements have been met and (3) an advisor has been assigned.

Graduation Requirements

The college awards the degree of Associate in Applied Science or the appropriate certificate to students who meet its graduation requirements. Graduation ceremonies are held at least once a year. A fee of \$10 is charged for all students applying for graduation; however, if the student does not graduate because of failure to meet graduation requirements, this fee will be refunded.

To graduate with an Associate in Applied Science Degree, students must:

1. Earn a minimum of 90 degree credits, the last 15 of which must be earned at the college.
2. Complete all course work and receive a computable grade.
3. Complete an approved curriculum and (1) be a high school graduate, or (2) have successfully completed a high school equivalency examination.
4. Satisfy all financial obligations due the college.
5. File a notice of intent to graduate with the regional Office of Student Services at the beginning of the final quarter preceding graduation.
6. Have a minimum cumulative grade point average of 2.0 for the courses which contribute to the requirements of the degree.

To graduate with a Technical Certificate, students must:

1. Earn a minimum of 45 degree credits.
2. Satisfactorily complete all course work and receive a terminal grade.
3. Complete an approved curriculum.
4. Satisfy all financial obligations due the college.
5. Have a minimum cumulative grade point average of 2.0 for the courses which contribute to the requirements of the certificate.

To graduate with an Occupational Certificate, students must:

1. Earn the designated number of credits.
2. Satisfactorily complete all course work and receive a terminal grade.
3. Complete an approved curriculum.
4. Satisfy all financial obligations due the college.
5. Have a minimum cumulative grade point average of 2.0 for the courses which contribute to the requirements of the certificate.

CONDUCT

College students are considered to be mature. Their conduct both in school and out is expected to be dignified and honorable.

The college has few rules of conduct. Students will consider they are living in a democratic situation and that the reputation of the college rests with them. Common courtesy and cooperation at all times make conduct rules unnecessary.

The following resolution has been adopted by the State Board of Trustees of the college:

WHEREAS the mission of Indiana Vocational Technical College is to teach, conduct research and serve the public through the proper use of its facilities and personnel, the irresponsible acts of individuals can militate against the effective accomplishments of the college; and

WHEREAS the unreasoning acts of a few, whether they be students, faculty members, or outsiders not connected with the college, likewise militate against the effective pursuit of education by a student; and WHEREAS the spirit of protest and independence that is normal in students has in the present time been evidenced by excessive opposition to established principles of law and order, by abuse of personal freedoms, by misuse of the basic rights of free speech and by the use of displays of force;

The Board of Trustees of Indiana Vocational Technical College hereby resolves:

That all basic rights of free speech and independent action of individual citizens will be preserved so long as any exercise of such rights does not infringe upon the freedom and rights of others.

That any grievance presented in a calm and reasonable manner will be given fair and thorough consideration by the respective administrators, including Regional Boards of Trustees, and a just and impartial answer will be returned with the minimum delay.

HOWEVER, any person, student, faculty member, or employee of the college who takes part in any activity which interferes with other persons' lawful use of the property of Indiana Vocational Technical

College and regional institutes, or who performs in such manner as to have the effect of denying or interfering with the lawful use of such property by others, will be requested to leave the premises of the college or its regional institutes, and if any person, student, faculty member or employee of the college refuses to leave the premises of any property of the college, when so requested regardless of reason, by any duly constituted official of Indiana Vocational Technical College including its regional institutes, then proper law enforcement officials will be requested to arrest such persons as trespassers, and such persons will be subject to such disciplinary action by the college as the proper officials deem reasonable, including expulsion and/or termination of benefits and rights. If any person or property is in danger of harm from any activities such as described above, the law enforcement officials will be requested to arrest such offenders and remove them from the premises. This Resolution is hereby adopted and made a matter of corporate record, this 31st day of March, 1969.

Disciplinary Dismissal

Instructors can recommend to the Student Status Committee that any student be withdrawn from a course for disciplinary reasons. Students recommended for dismissal will be notified by their advisors and will be given an opportunity to be heard by the Student Status Committee before final action is taken. Disciplinary dismissals from the college will be upon recommendation by the Student Status Committee and at the discretion of the vice president/dean.

Students dismissed for disciplinary reasons will not be entitled to refunds.

STUDENT RECORDS

Indiana Vocational Technical College is an educational institution covered by the Family Educational Rights and Privacy Act, more commonly referred to as the Buckley Amendment. The purpose of the Act (Section 438 of the General Education Provisions Act, 20 USC 1232g) is to protect the privacy of students and their parents in regard to access and disclosures of students' records maintained by the college. In compliance with the Buckley Amendment, the college has developed appropriate formal rules and regulations. If students wish to gain access to their academic records, each regional Office of Student Services will assist them. The college has designated the following personally identifiable student information as directory information:

1. name

2. address
3. date and place of birth
4. major field of study
5. participation in officially recognized activities and sports
6. weight and height of members of athletic teams
7. dates of attendance
8. degrees and awards received
9. the most recent previous educational institution attended
10. other similar information

This information may be disclosed, as in a graduation program, etc., unless a parent or student refuses to permit the inclusion of a category, or all such information as designated directory information. This refusal must be in writing to the institution describing that information which is to be excluded and must be made within three weeks after the student begins classes at the college. All notices of refusal and questions on student records should be directed to the regional Director of Student Services.

THE CURRICULUM

The college offers a wide variety of occupational learning opportunities for anyone seeking employment, job advancement, and career enhancement. These learning opportunities are organized into two main categories: instructional and informational.

Instructional learning opportunities consist of complete programs and individual courses which provide the skills and knowledge needed for specific jobs or occupations.

An instructional program can consist of a few courses and take only one quarter to complete, or it can consist of more than 30 courses and require up to two years of full-time effort.

A course consists of a sequence of interrelated curriculum and instruction that facilitate learning the necessary occupational skills. These courses are conducted, depending on the teaching method used, 1 to 4 or more hours per week for an 11-week quarter.

Instructional programs and courses are considered as credit for valuation purposes

3 Program Levels

Ivy Tech awards 3 levels of Occupational Qualification: the Associate of Applied Science (or Associate Degree), the Technical Certificate, and the Occupational Certificate. A single program can have one or more levels. The levels are distinguished by

both the time needed to reach each level and the course content. (See the individual program descriptions.)

Informational opportunities consist of workshops, seminars, interviews, conferences, etc., which are occupationally based but are informational—rather than instructional—in nature. A conference designed to keep journeymen informed about a new procedure or a seminar in advertising media for artists are examples of informational opportunities. These do not usually carry college credit.

Career Ladder

The college's unique curriculum is designed around a career ladder concept. Students can begin training at their present skill levels and progress as far as they desire in meeting their occupational goals. A student can enter a program at Ivy Tech, take courses totalling less than 45 credits to obtain an Occupational Certificate, and obtain a job. That same student can continue taking more training in the same specialty totalling less than 90 credits and earn a Technical Certificate. This can be accomplished either part-time, while working, or full-time. Then that student, with continued study and training of more than 90 credits in the same program, can attain the college's highest degree, the Associate of Applied Science. Of course, the minimum requirements vary, depending on the designs of the programs. Later, that person can continue to attend Ivy Tech to keep current in the occupational specialty.

Ivy Tech counselors and faculty advisors can illustrate the many options available.

Student Oriented

The career ladder concept marks Ivy Tech as a student-oriented college in which it is necessary to assess the competencies of all prospective students prior to their enrollment. Students are encouraged to seek counselling and take placement tests prior to their enrollment. The results provide insight for counselors and advisors to assist students in planning their programs. Students are placed in courses consistent with their capabilities and career objectives.

Part-Time Programs

Most of the programs and courses of the college are offered for students desiring to attend on a part-time basis. However, contact hours per week and individual class schedules are specifically arranged by each regional institute to accomodate the special needs of employed students.

Curricula Advisory Committees

The college curricula has been developed with the assistance and advice of regional advisory committees representing business, industry, labor, commerce, agriculture, and government institutions. Through these committees, the college keeps informed of employer's needs for trained personnel, job opportunities, and performance standards. These committees insure that programs presented by the college equip graduates with employable skills.

THE CURRICULAR STRUCTURE

The curricular structure for each program allows for course electives and regional option courses that comprise the program. For the purposes of individualizing instruction, some courses may be offered as a series of modules. In some instances, two related courses can be combined to best fit the local equipment, facilities, or situation. Regional option courses provide for local variation to meet the employment needs of a particular community.

Schedules of course offerings are developed and published quarterly by each regional institute. These schedules list the courses and the times and places they are offered and illustrate which programs are available to students in each region.

No single region offers all programs and courses listed in this catalog. Students can attend the region of their choice, i.e., students in one region can enroll for courses in another region or transfer to gain access to specific offerings.

Courses are listed for each program in this catalog in a recommended sequence, although scheduling varies among the regions. The more advanced courses can have one or more prerequisites. Faculty advisors will determine the appropriate course sequence and approve the selection of electives for individual students. Courses with Roman numerals should be taken in sequence. Faculty advisors must approve and sign the appropriate authorization forms for a course to be counted toward graduation or degree requirements.

Lab courses can be conducted in a 'shop' situation depending on the local circumstances. This can result, for example, in three contact hours of shop being required where scheduled as a two contact hour lab, or vice versa. Three hours of shop per week or two hours of lab equate to one credit. Other official college documents define lecture, lab, shop, and contact hours relative to course credits.

In today's fast-paced technological society constant change has become the rule rather than the exception. New methods, materials, and career fields are constantly evolving and expanding.

Consequently, any training institution which has occupational training and career development as its primary goal cannot remain static either in its program offerings or course content. For this reason, Ivy Tech continually revises and updates its curricula to meet the ever-changing needs of Indiana's employers and citizens.

The outlines and descriptions of the curricula in this catalog are an accurate presentation of their status at the time of publication. However, variations can occur in both program content and course sequence as a result of the college's continuing effort to maintain occupational relevance in all programs.

GENERAL EDUCATIONAL DEVELOPMENT (GED) TESTING

The thirteen regional institutes of Indiana Vocational Technical College have been designated General Education Development testing centers by the Indiana Department of Public Instruction.

Students scoring sufficiently high on the test qualify for a high school diploma either from their old high school or from the Indiana Department of Public Instruction.

Applicants wanting to take the tests must be residents of Indiana and at least 19 years old at the time they apply. Those who fail the tests can take them again after six months.

The college will offer instruction to prepare for the GED Test only to students already admitted to the college to aid them in achieving their occupational objectives. The required curriculum material is available as part of the skills advancement courses in the Learning Resource Center.

Each regional institute has further details and testing schedules.

LEARNING RESOURCE CENTER

An extremely important factor in successful career training is recognizing each student as an individual with unique learning requirements. For this reason the Learning Resource Center in each regional institute is one of the college's most important services.

Students work with books, tapes, slides, models, and similar materials on an individual basis, repeating the work as often as necessary until they are sure they understand it. If they need assistance, an instructor is nearby.

In this low-pressure learning laboratory environment, students enjoy study and usually progress faster than they would with other methods.

The learning laboratories are used primarily to teach such basic subjects as communications, speed

reading, comprehension, writing and mathematics. Since deficiencies in these areas often restrict students in technical subjects, the laboratories help them overcome deficiencies as they progress in other studies.

SKILLS ADVANCEMENT COURSES

Skills advancement or learning skills courses, as part of the Learning Resource Center, support and enhance the entire curriculum. These courses feature traditional and individualized self-paced instruction tailored to students' needs. The emphasis of the subject material is on communication skills, mathematics skills, shop processes, and science with supplementary material oriented toward specific occupations. All advancement studies courses are designed so that students can begin at their current knowledge levels and advance to their objectives as rapidly as they choose.

The amount of credit granted is based on the number of specific objectives the student has met. While credit will be granted for those courses required to achieve the minimum entry requirements, such courses do not count toward graduation in most programs.

SPECIAL COURSES

Special courses can be offered as separate courses or as electives (when permitted by the program) depending on local need as determined by the region.

PRACTICUM COURSES (LABORATORY AND SHOP)

College instructional programs may include one or more Practicum courses. Practicum courses are generally regional options and are designed to augment regular courses in a program by providing greater opportunity for laboratory and shop experiences to enhance the learning process. Practicum courses may also be offered as electives and entail special lab or shop work directly related to one or more specific courses for which additional skill development and practice time are needed. The work activity must be related directly to students' major programs of study and be supervised and evaluated like any other organized or structured laboratory or shop course.

Students benefit primarily from the skill development and practice which often is a valuable aid in their seeking jobs and securing better starting wages upon graduation.

The following requirements will be satisfied for all laboratory or shop courses:

- The Practicum course will be supervised by a qualified instructor.
- Unless offered as an elective, a Practicum course selected as a regional option for a specific program will be required for all students in the program.
- ✗—The course outline or syllabus for each Practicum course will reflect the competencies or performance objectives students are expected to achieve.
- ✗—The course outline or syllabus will be uniform for all students in a given Practicum course, but job tasks may be specified on an individual basis.
- Attendance must be taken in accordance with college procedure.
- Student achievement and performance must be evaluated and a grade report rendered.

Credit may be awarded for a Practicum course based on a challenge examination under/or an evaluation of a student's experience.

FIELD STUDY/COOPERATIVE EDUCATION COURSES

College instructional programs may include one or more Field Study/Cooperative Education Courses. Field Study/Cooperative Education is a division core level course. It is comparable to on-the-job training activities in which students work in approved places of employment. The work activity must be related directly to the major program of study and be supervised and evaluated as with any other organized or structured

shop or lab course. Thus, instructors will make periodic job-site visits and communicate with students and their supervisors relative to progress and achievement.

The employers may pay a stipend or regular wage to the trainees for the services rendered. The college will not provide additional insurance for such activity. There shall be no formal contracts between Ivy Tech and the employer. The employer and the college, however, shall have a simple understanding to collaborate in a training program which might be of some benefit to the employer in generating a pool of trained manpower. The employer is, therefore, under no obligation to hire the student upon completion of the course, although this might be the outcome of such a relationship.

Students benefit primarily from the work environment and acquire an added credential of job experience which often is valuable in job seeking and in securing a better starting wage upon graduation. The course syllabus will be uniform for all students in a given course but job tasks may be specified on an individual basis. To achieve credit, each student must submit proof summarized in a report of an acceptable level of achievement based on: 1) an instructor-approved course syllabus and/or 2) an organized sequence of evaluations. Credit may be awarded through the challenge examination process as per standard college policy.

Instructional Programs

**Business Sciences
Graphics and Media
Health Occupations
Trade and Technical**

BUSINESS SCIENCES

Our increasingly complex society offers outstanding job opportunities for those who have acquired a sound, fundamental knowledge of the business field. The introduction of sophisticated information-handling systems in modern offices has increased the demand for highly trained office personnel.

To meet this need, the college offers programs in the major business career fields. Many of these programs lead to the Associate in Applied Science degree and also provide a firm basis for career advancement.

The primary objective of the program in the Business Sciences career cluster is to prepare competent graduates in the various areas of business, including development of business leadership and decision-making ability as they apply to one of the fastest growing areas of employment in our economy.

Accounting
Credit and Finance
Small Business and Office Management
Court Reporting
Computer Programming
Hotel-Motel Management
Industrial Management
Marketing
Secretarial-Administrative
Secretarial-Legal
Secretarial-Medical

Accounting

CAREERS

Accounting is a means of expressing in financial terms the results of the operations which take place in business, government, and other organizations. Accounts must effectively measure and communicate data reflecting the efficiency level of human, financial, and material resource utilization.

The accounting office activity is generally performed in the financial division of businesses and organizations. Demand for accounting workers is particularly strong in banks, insurance companies, manufacturing firms, government offices, and professional service organizations. Entry level positions in the accounting field include junior accountant, junior auditor, cost accounting clerk, bookkeeper, junior executive trainee, and many others. After gaining experience and additional training, advancement to accounting supervisor, senior accountant, senior auditor or private practice is possible.

IVY TECH'S PROGRAM

The Accounting program provides instruction for employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science degree. Additionally, an option in Credit and Finance permits interested students to specialize in this area.

The program includes courses in the following areas: accounting principles, cost accounting, tax accounting, business law, communications and office calculating machines. The courses are in various formats such as group or individual instruction and laboratory practice. The program may also provide for on-the-job training through which the student gains actual work experience.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 94 credits

PROGRAM COMPOSITION	Credits
0110 Accounting Principles I Mathematics Elective	4 3
8110 Communications Elective	4 4
0120 Accounting Principles II	4
8111 Business Communications	4
1236 Office Calculating Machines Elective	3 4
0130 Accounting Principles III	4
8113 Oral Communications	4
0122 Business Law I Electives from Bus. Div.	3 6
0140 Intermediate Accounting I	4
0141 Individual Income Taxes	4
0142 Job Order Cost Accounting	4
0143 Business Law II	3
0150 Intermediate Accounting II	4
0151 Process Cost Accounting	4
0152 Business Income Taxes or 0157 Payroll Accounting Elective	4 3
0160 Intermediate Accounting III	4
8501 Field Study/Coop Ed.	3
8401 Human Relations or 8402 Applied Psychology Electives	4 6
Total Credits:	94

ELECTIVES/REGIONAL OPTIONS

8114 Technical Reporting	3
8118 Effective Reading	2
8501 Field Study/Coop Ed. Any Mathematics or Science courses Any Business Division courses	1-9
0124 Consumer Economics	3
0153 Microeconomics	3
0154 Macroeconomics	3
0155 Managerial Accounting	3
0156 Accounting Laboratory	1-6
0162 Auditing	3
0164 Money and Banking	3
0165 Budgeting	3
0166 Introduction to Management	3
0167 Seminar in Accounting	1
0168 Accounting for Supervisors (non-majors)	4
0169 Personal Finance	3
0190 Accounting Clerical Procedures	2-8

For course descriptions see page 100

Accounting

Option in Credit and Finance

PROGRAM COMPOSITION

	Credits		
0110 Accounting Principles I	4	0141 Individual Income Taxes	4
8213 Mathematics of Finance	3	0172 Principles of Finance II	3
8110 Communications	4	0173 Consumer Credit	3
8401 Human Relations or	4	0174 Credit Procedures	3
8402 Applied Psychology	4	0175 Credit Management I	3
0120 Accounting Principles II	4	0176 Credit Management II	3
0510 Introduction to Data Processing & Programming or	5	0177 Commercial Credit	3
0571 Introduction to Data Processing	3	0178 Credit and Collections	3
8111 Business Communications	4	8501 Field Study/Coop Ed.	6
0122 Business Law I	3		
1236 Office Calculating Machines	3		
0142 Job Order Cost Accounting	4		
0323 Business Principles and Organization	3		
0143 Business Law II	3		
8113 Oral Communications Elective (minimum)	4		
8210 Statistics	3		
0153 Microeconomics	3		
0171 Principles of Finance I	3		
0166 Introduction to Management Elective (minimum)	3		
	2		

Total Credits: 94

ELECTIVES/REGIONAL OPTIONS

Any Business Division courses	
8203 Technical Mathematics I	4
0130 Accounting Principles III	4
0152 Business Income Tax	4
0165 Budgeting	3
1212 Typewriting I	4

For course descriptions see page 102

Small Business and Office Management

CAREERS

Managers are supervisors who help run small commercial businesses, offices, departments, or units in government and other organizations. They assist upper management in such areas as personnel, finance, marketing, operations, or other functions.

The success or failure of an organization depends heavily on how effectively business managers perform in their jobs. Demand for business management workers is very promising, but future job competition will be relatively keen. Entry level management positions include management trainee, junior account executive, junior executive trainee, assistant buyers, and many others.

IVY TECH'S PROGRAM

The Small Business and Office Management Program at Ivy Tech cuts across all other program areas in the business division. This curriculum provides access to the courses in the other programs permitting both breadth and specialization in small business and other supervisory and managerial fields. Two broad areas of specialization are encompassed: small business management, and office management and supervision functions in small firms or departments of larger commercial and industrial organizations and governmental units.

Small business management specialization covers the supervisory and managerial skills needed for positions with small firms and retail commercial businesses such as fast foods, appliance sales, auto parts, gas stations, small loan offices, grocery markets, and small

retail shops. Also included are service-repair-installation firms such as in the building trades and automotive repair industry, tv-radio repair, a host of home services, and commercial art and photography. These typically are small family businesses, sole proprietorships, partnerships, or franchises.

The skills required in small business management include basic bookkeeping, marketing, accounting, taxation, and business law. Basic skills are essential in supervision, customer relations and psychology, purchasing and inventory control, banking and finance, office management, business organization and partnership, math and communications for business.

The Office Management option provides instruction for entry level managerial and supervisory jobs in small to medium-sized firms or departments of larger commercial and industrial organizations or governmental units. Office skills include the fundamentals of accounting, supervision, labor law and relations, internal reports for control, inventory, records management and data collection and recording. Essentially, these are technical support functions typically performed by assistants who operate under the supervision of mid-management level professionals.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 90 credits

PROGRAM COMPOSITION

General and Related Core	24 Credits	Electives/Regional Options:
Communications:		Any general and related core courses
8100 Communications	4	Any Business Division courses
8113 Oral Communications	4	1212 Typewriting I
8111 Business Communications	4	1236 Office Calculating Machines
Mathematics:		0141 Individual Income Taxes
8212 Business Math	3	0152 Business Income Taxes
8213 Math and Finance	3	0970 Personnel Management
Social Science:		
8401 Human Relations or	4	
8402 Applied Psychology	4	
Special:		OPTION FOR OFFICE MANAGEMENT: 44 Credits
8501 Field Study/Coop Ed	2-9	(Medium Firms, Depts., & Gov't Units)
Business Division Core	22 Credits	Requirements:
0110 Principles of Accounting	4	0923 Techniques of Supervision II
0323 Business Principles & Organization	3	0960 Economics of Industry
0571 Introduction to Data Processing or	3	0968 Management by Objectives
0942 Purchasing & Inventory Control	4	0973 Training for Results
0122 Business Law	3	0932 Safety Regulations
0913 Techniques of Supervision I	3	0974 Conference Leadership
0165 Budgeting	3	
Economics Elective	3	
OPTION FOR SMALL BUSINESS MANAGEMENT	44 Credits	Electives/Regional Options:
(Retail and Repair/Service Firms)		Any general and related core courses
Requirements:		Any Business Division courses
1157 Entrepreneurship	4	0142 Job Order Cost Accounting
1148 Principles of Insurance	4	0141 Individual Income Tax
0932 Safety Regulations	3	0152 Business Income Tax
Marketing Electives	8	1148 Principles of Insurance
		0126 Principles of Wholesaling
		1134 Sales Management
		0970 Personnel Management
		Total credits: 90

For course descriptions see page 103

Court Reporting

CAREERS

Court reporting is an honored profession with excellent employment opportunities for both men and women. The growth of our court system, governmental agencies and the expansion in business and commercial activities are resulting in an ever-increasing demand for the shorthand court reporter which far exceed the number of entrants into this profession.

Court reporters are usually employed as the official recorder of the proceedings in a court, in a hearing room, in state or federal legislatures, or self-employed as in the case of free-lance court reporter.

IVY TECH'S PROGRAM

This program offers a firm foundation in business law, legal and medical terminology, and physiology and anatomy. The subject areas of English, typing, machine shorthand, and judicial procedures are emphasized. In addition, each student will receive instruction in general office practices, preparation of transcripts, dictation of notes, indexing and filing of notes, marking of exhibits, use of reference material, and ethics of the court reporting profession.

The National Shorthand Reporters Association has devised specific guidelines for courses, and specific goals and objectives for the graduating court reporter. In order to achieve these goals and objectives, Indiana Vocational Technical College has deemed it necessary to state the following requirements for admission to the Court Reporting program:

1. High School diploma or G.E.D. equivalent
2. Comparative Guidance and Placement Test—the percentile rating must be above the 50 percentile mark
3. A passing grade on a visual and oral phonics discrimination test, administered by the division chairperson or department head
4. An acceptable evaluation of an interview conducted by the division chairperson or department head where the prospective motivation and attitude are rated.
5. A minimum typing speed of 30 words a minute. However, students who have not had any typing will not be automatically rejected if all other results are acceptable.

Upon successful completion of this eight quarter program, the student will receive an Associate in Applied

Science degree in Court Reporting. The student will also be eligible to apply for and take the National Shorthand Reporters Association examination which is required for certification. At this time, the student must be able to write 225 words a minute on unfamiliar material with at least 95 percent accuracy. The exit-level criteria for this program is a minimum typing speed of 70 words a minute, and a minimum machine shorthand speed of 225 words a minute testimony, 200 words a minute legal opinion/jury charge, and 180 words a minute literary with a minimum of 95 percent accuracy.

If unable to meet the minimum machine shorthand dictation requirement of 120 words a minute by the end of the fourth quarter, the student will be eligible for a technical certificate in the Secretarial Administrative program.

PROGRAM LEVELS

Technical Certificate: (administrative Secretarial) a minimum of 45 credits

Associate in Applied Science: (Court Reporting) a minimum of 126 credits

The Administrative Secretarial A.A.S. degree may be awarded if minimum standards for Court Reporting are not attained.

PROGRAM COMPOSITION	Credits
1212 Typewriting I	4
8111 Business Communications I	4
0122 Business Law	3
0421 Machine Shorthand I	5
1222 Typewriting II	4
0462 Courtroom Punctuation I	4
1310 Legal Terminology	3
0431 Machine Shorthand II	5
0432 Speed Building I	1
0461 Transcription I	2
8402 Applied Psychology	4
0472 Courtroom Punctuation II	4
0443 Dictation—Q&A I	3
0433 Dictation—Literary I	2
0434 Dictation—Jury Charge I	1
0441 Speed Building II	1
0464 Transcription II	2
0453 Medical Terminology	4

1321 Legal Office Procedures	3	0473 Speed Building V	1
0451 Dictation—Q&A II	2	0481 Transcription V	3
0442 Dictation—Literary II and Medical I	2	0412 Vocabulary Building	3
0444 Dictation—Jury Charge II	1	0475 Courtroom Procedures	2
0452 Speed Building III	1	0476 Dictation—Q&A V	3
0471 Transcription III	3	0477 Dictation—Literary V	1
9353 Integrated Basic Science I	4	0478 Dictation—Medical IV, Jury V, Legal Opinion II	1
0460 Dictation—Q&A III	3	0479 Dictation—4-Voice Q&A	1
0454 Dictation—Literary III and Medical II	2	0482 Speed Building VI	1
0455 Dictation—Jury Charge III	2	0483 Transcription VI	3
0463 Speed Building IV	1	0484 Dictation—Q&A VI	3
0474 Transcription IV	3	0485 Dictation—Medical V and Literary VI	2
0465 Business Communications II	4	0486 Dictation—Jury Charge VI	2
0110 Accounting Principles I	4	8501 Field Study/Coop Ed	4-5
0470 Dictation—Q&A IV	2		
0466 Dictation—Jury Charge IV and Legal Opinion I	1		
0467 Dictation—Literary IV and Medical III	2		

Total Credits:

126

For course descriptions see page 103

Computer Programming

CAREERS

Computer programming personnel prepare data in the form necessary for processing, operate computer consoles and related equipment, design or adapt programs, and analyze and interpret the machine's output. Data processing takes place in nearly all facets of business, industry, and government.

Demand for computer programmers is particularly high in areas such as banking, insurance, hospitals, manufacturing and distributing firms, and transportation organizations and government. Entry level positions include programmer, data processing control clerk, computer operator and many others. Advancement to system analyst or administrative positions is possible after further training and experience.

IVY TECH'S PROGRAM

The Computer Programming curriculum provides an integrated study of the theory and practice of data processing for business, industry, and other institutional use. The college offers a variety of courses and

it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The curriculum includes courses in the following areas: cobol programming, business principles, communications, computer operations, problem solving, systems analysis and design, accounting, and statistics. The courses are presented in various formats such as group or individual instruction, and laboratory practice. The curriculum may also provide for a field study.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 103 credits

PROGRAM COMPOSITION	Credits				
0510 Introduction to Data Processing or	5	0560	Data Communications		4
0511 Introduction to Programming	5	8501	Field Study/Coop Ed		6
0323 Business Principles and Organization	3		Computer Programming Electives		5
Mathematics Elective	4		Elective		3
8110 Communications	4			Total Credits:	103
0520 Cobol Programming I	5				
0521 Computer Operations	5				
0522 Problem Solving Techniques	3				
8402 Applied Psychology or 8401 Human Relations	4				
0530 Cobol Programming II	5				
0531 Operating Systems	5				
0110 Accounting Principles I	4				
8113 Oral Communications	4				
0540 Systems Analysis and Design	4				
8210 Statistics	3				
0120 Accounting Principles II	4				
Computer Programming Elective	5				
Business Division Elective	5				
0551 Business Programming Applications	5				
8111 Business Communications	4				
Computer Programming Electives	5				

ELECTIVES/REGIONAL OPTIONS

Any Mathematics and Science courses	2
Any Communication courses	2
8501 Field Study/Coop Ed	1-9
Any Business Division courses	
0570 Assembler Language Programming I	5
0571 Introduction to Data Processing (non-majors)	3
0572 Fortran Programming	5
0573 RPG Programming	5
0574 PL/1 Programming I	5
0575 Topics in Data Processing I	5
0576 Assembler Language Programming II	5
0577 Topics in Data Processing II	5
0578 Practicum	1-3

For course descriptions see page 105

Hotel-Motel Management

CAREERS

Hotel-Motel management involves the effective operation of these establishments profitably while satisfying the guests. Management workers determine room rates and credit policies, direct the operation of the kitchen and dining rooms, and manage the housekeeping, accounting and maintenance departments of the hotel. These workers are also responsible for solving problems that can arise.

Demand for hotel-motel management workers is increasing each year. Entry level positions may include manager trainee, catering manager, sales representative or purchasing agent. Further training and experience is usually needed for advancement to assistant manager, sales manager, general manager or to self employment.

IVY TECH'S PROGRAM

Ivy Tech's Hotel-Motel Management program provides instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objectives. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science degree.

The program includes courses in the following areas: hospitality management, hotel-motel maintenance, supervisory housekeeping, purchasing, business law, business math, sales promotion, and communications. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits
 Technical Certificate: a minimum of 45 credits
 Associate in Applied Science: a minimum of 93 credits

PROGRAM COMPOSITION**Credits**

0711 Introduction to Hospitality Management	4
8212 Business Mathematics	3
8110 Communications	4
0744 Sanitation	4
8213 Mathematics of Finance	3
0323 Business Principles and Organization	3
0760 Hotel-Motel Maintenance I	3
0762 Supervisory Housekeeping	4
8401 Human Relations or	4
8402 Applied Psychology	4
0110 Accounting Principles I	4
0742 Food & Beverage Purchasing & Control	4
8113 Oral Communications	4
0763 Hotel-Motel Maintenance II	3
0733 Food and Beverage Management & Service	4
0122 Business Law I	3
8111 Business Communications I	4
0120 Accounting Principles II	4
0712 Front Office Procedures	4
0752 Sales Promotion	4

0913 Techniques of Supervision I

3

0122 Business Law or

3

0753 Hotel-Motel Law

3

Elective

2

0721 Hotel-Motel Supervision or

3

0923 Techniques of Supervision II

3

Electives

6

8501 Field Study/Coop Ed

6

Total Credits:

93

ELECTIVES/REGIONAL OPTIONS

Any Mathematics and Science courses

Any Business Division courses

8114 Technical Reporting

3

8118 Effective Reading

2

8501 Field Study/Coop Ed

1-15

0722 Apartment Management and Leasing

3

0723 Convention Management

3

0724 Financial Management and Control

3

0725 Institutional Management

3

0726 Property Management

3

0727 Tourism

3

0728 Hotel-Motel/Seminar

3

2002 Fundamentals of Interior Design

3

For course descriptions see page 106

Industrial Management

CAREERS

Industrial management workers are found at all levels of business, industry, labor, government and education. These workers assist in areas such as personnel supervision, production operation and planning, quality control, plant layout, production methods analysis, and other facets of management.

Demand for industrial management workers is expected to continue to increase; however, the competition for these opportunities is keen. Entry level positions include management trainee, sales representative, or departmental manager assistant. Advancement to higher levels of management or self

employment is possible with additional experience and training.

IVY TECH'S PROGRAM

The Industrial Management program is designed to provide the student with an understanding of management concepts and an opportunity to develop practical applications. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an

Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: business principles, industrial safety, supervision, leadership, data processing, communications, production planning, and accounting. The courses are presented in various formats such as group or individual instruction. In this program, group participation is emphasized and it may also provide for a field study.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 91 credits

PROGRAM COMPOSITION

Credits

8110 Communications	4	0168 Accounting for Supervisors Elective	4
8401 Human Relations or	4	0940 Quality Control Industrial Supervision Electives	3
8402 Applied Psychology	4	Electives	6
0913 Techniques of Supervision I or	3		6
0914 Techniques of Leadership I	3		
Electives	5		
0923 Techniques of Supervision II or	3		
0924 Techniques of Leadership II	3		
8203 Technical Mathematics I	4		
0571 Introduction to Data Processing (non-majors)	3		
0122 Business Law I	3		
Elective	3		
0921 Principles of Industrial Safety	3		
8113 Oral Communications	4		
Electives	10		
8114 Technical Reporting	3		
0914 Labor Relations	3		
Economics Elective	3		
Electives	6		
0951 Production Planning and Control	3		
8210 Statistics	3		
0110 Accounting Principles I or	4		

Total Credits: 91

ELECTIVES/REGIONAL OPTIONS

8118 Effective Reading	2
8117 Effective Listening	2
8501 Field Study/Coop Ed	1-9
Any Mathematics and Science courses	
Any Business Division courses	
0912 Manufacturing Organization I	3
0925 Manufacturing Organization II	3
0931 Time and Motion	3
0932 Safety Regulations	3
0942 Purchasing and Inventory Control	4
0950 Manufacturing Costs and Value Analysis	3
0952 Work Analysis and Improvement	3
0954 Materials Handling	3
0956 Managerial Cost Accounting	3
0960 Economics of Industry	3
0961 Plant Layout and Process Planning	3
0962 Traffic and Transportation Management	3
0963 Manufacturing Processes I	3
0964 Industrial Assembly Techniques	3
0967 Drafting and Manufacturing Standards	3
0968 Case Problems in Management	4
0970 Personnel Management	3
0971 Manufacturing Processes II	3
0973 Training for Results	3
0974 Conference Leadership	3
0975 Management Information Systems	3
0976 Organizational Structure and Change	3
0977 Industrial Supervision Seminar	3
0980 Case Problems in Labor Relations	3
0981 T A for Managers	3
0982 Management by Objectives	3
0983 Time Management	2

For course descriptions see page 107

Marketing

CAREERS

Marketing is a dynamic segment of business and essential to the American economic system. It is the action center of business, the arena for buyer acceptance or rejection of supplier goods, services and ideas. Career opportunities are to be found in manufacturing, wholesaling and retailing; in the industrial and consumer markets; in profit and non-profit organizations; for the self-employed and the gainfully employed.

Between one-third and one-half of United States employment is in the marketing segment of business. Occupational opportunities include: (1) the selling and buying functions related to possession, (2) the transportation and storage functions related to supply, (3) the product planning and pricing functions related to merchandising. Income potential is at all levels of the American economy.

IVY TECH'S PROGRAM

The Marketing program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The general program objectives include:

1. Placement and/or advancement in business, with emphasis on the marketing segment.
2. Sales and sales related occupations.

Students interested in enrolling in this program will have the opportunity for individual counseling. Consequently, some might be eligible for advanced standing because of their previous training or job experience. Others will need to review mathematics and communications skills through individually prescribed units from the skills advancement studies.

The program includes courses in the following areas: marketing, wholesaling, sales management, salesmanship, advertising, distribution, accounting, finance and communications. The courses are presented in various formats such as group or individual instruction. The program may also provide a field project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Sciences: a minimum of 90 credits.

PROGRAM COMPOSITION

	Credits
0323 Business Principles and Organization	3
1114 Marketing I	4
8212 Business Mathematics	3
8110 Communications	4
0110 Accounting Principles I	4
0122 Business Law I	3
1115 Sales Techniques	4
1116 Marketing II	4
0166 Introduction to Management	3
0942 Purchasing and Inventory Control	4
1148 Principles of Insurance	4
1135 Principles of Retailing	4
1136 Physical Distribution	4
8401 Human Relations	4
1147 Principles of Advertising	4
1157 Entrepreneurship	4
8213 Mathematics of Finance I	3
8111 Business Communications	4
1156 Advanced Sales Techniques	3
Electives	20
Total Credits:	90

ELECTIVES/REGIONAL OPTIONS

Any College credit courses approved by program advisor.

8501 Field Study/Coop Ed	1-9
1126 Principles of Wholesaling	4
1134 Sales Management	4

For course descriptions see page 110

Secretarial-Administrative

CAREERS

The administrative secretary handles all secretarial duties including dictation and typing. The duties for an administrative secretary range from filing, routing mail, and answering telephones to more responsible jobs such as answering letters, doing statistical research, and writing reports.

Demand for administrative secretaries is particularly high in banks, insurance companies, real estate firms, government agencies, and other establishments providing services to the public. Entry level employment opportunities are in almost every facet of business, industry, government, and public or private non-profit agencies.

IVY TECH'S PROGRAM

The Administrative Secretary program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree. Technical and Occupational Certificate students may substitute approved electives for shorthand.

The program includes courses in the following areas: typewriting, shorthand, communications, office procedures, office calculating machines, business law, accounting, psychology, and human relations. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

PROGRAM COMPOSITION

	Credits
1212 Typewriting I	4
1210 Shorthand I	4
1214 Personal Development or 8402 Applied Psychology	3
8110 Communications	4

1222 Typewriting II	4
1220 Shorthand II	4
8111 Business Communications	4
8212 Business Mathematics or	3
8213 Mathematics of Finance I	3
1232 Typewriting III	4
1230 Shorthand III	4
1241 Clerical Office Procedures	3
1236 Office Calculating Machines	3
1224 Records Management	3
1242 Typewriting IV	4
1240 Shorthand IV	4
0122 Business Law I	3
8113 Oral Communications	4
1264 Intensive Secretarial Lab I or 1250 Shorthand V or	6
0110 Accounting Principles I	4
8401 Human Relations or	4
8402 Applied Psychology	4
Electives	3-7
1262 Typewriting V	4
8501 Field Study/Coop Education or 1269 Intensive Secretarial Lab II	6
Electives	6

Total Credits: 92

ELECTIVES/REGIONAL OPTIONS

8114 Technical Reporting	3
8118 Effective Reading	2
8501 Field Study/Coop Ed. Any Business Division courses Any courses for Medicine and Legal Secretarial programs	1-15
1233 Key Device Training	4
1238 Advanced Key Device Training	4
1243 Office Management and Procedure	3
1260 Shorthand VI	4
1261 Administrative Office Practice	3
1267 Machine Transcription	2
1270 Introductory Typing (non-majors)	3
1271 Introductory Clerical Office Procedures (non-majors)	5

For course descriptions see page 111

Secretarial-Legal

CAREERS

In addition to usual secretarial duties, a legal secretary performs legal research and aids the lawyer in preparing briefs.

Demand for legal secretaries is expected to increase for the next few years. Entry level positions such as professional legal secretary or legal assistant exist in lawyer's offices, legal departments in business, industry, or government, and in various other legal organizations.

IVY TECH'S PROGRAM

The Legal Secretary program is designed to provide instruction for employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses in the following areas: legal terminology, bookkeeping, business law, legal communications, shorthand, personal development and typewriting. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 66 credits

PROGRAM COMPOSITION

	Credits
1310 Legal Terminology	2
1214 Personal Development or	3
8401 Human Relations	4
1212 Typewriting I	4
1313 Legal Office Bookkeeping or	4
1210 Shorthand I	4
8110 Communications	4
0122 Business Law I	3
8212 Business Mathematics or	3
8213 Mathematics of Finance I	3
1222 Typewriting II	4
1321 Legal Office Procedures or	4
1220 Shorthand II	4
1331 Legal Office Communications	3
1232 Typewriting III	4
0143 Business Law II	3
1230 Shorthand III or	4
1236 Office Calculating Machines	3
8113 Oral Communications	4
1341 Legal Office Practice	4
1342 Typewriting IV (Legal)	4
1345 Shorthand IV (Legal) or Business Division Elective	4
8501 Field Study/Coop Ed or	6
1264 Intensive Laboratory I	6

Total Credits: 66

For course descriptions see page 113

Secretarial-Medical

CAREERS

A medical secretary prepares case histories and medical reports as well as performing clerical functions such as typing, filing, and answering telephones. The medical secretary serves as liaison between the doctor and patient and is important in building and maintaining good relations with patients.

Demand for medical secretaries is expected to increase along with other areas of the secretarial field. Entry level positions are in doctors offices, clinics, hospitals, or other health-related organizations.

IVY TECH'S PROGRAM

The Medical Secretary program provides instruction for initial employment or upgrading skills. The college offers a variety of courses, and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses from the following areas: medical terminology, medical office procedures, bookkeeping, personal development, typewriting, medical filing, communications and transcription. The courses are presented in various formats such as group or individual instruction and laboratory practice.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 48 credits

	PROGRAM COMPOSITION	Credits
9355	Medical Terminology	2
1214	Personal Development or	3
8401	Human Relations	4
1212	Typewriting I	4
3713	Medical Office Bookkeeping	4
8110	Communications	4
1236	Office Calculating Machines	3
3721	Medical Office Procedures	4
1222	Typewriting II or	4
3722	Medical Typewriting I	3
8212	Business Mathematics or	3
8213	Mathematics of Finance I	3
8402	Applied Psychology	4
1431	Medical Filing and Indexing	3
3743	Machine Transcriptions, Medical or	3
3733	Medical Typewriting II	3
3763	Medical Office Management	3
3732	Medical Office Communications	4
	Regional Options (3 or 4 quarters)	0-15

Total Credits: 48-63

Electives/Regional Options approved courses can be selected from health occupations and secretarial programs.

For course descriptions see page 113

GRAPHICS & MEDIA

The Graphics and Media career cluster of the college curricula contains those programs which combine technical knowledge of materials, machines, and methods of production with creativity to improve appearance, design, usefulness and general acceptance of a product by the consumer. Generally, a high degree of creative ability, the art and science of communicating, and the ability to anticipate consumer needs are required for success. Natural talent, determination, and willingness to work hard are essentials for success.

Commercial and Industrial Photography
Commercial Art
Interior Design
Printing
Library Resource Aide

Commercial and Industrial Photography

CAREERS

Commercial artists perform many tasks involving the use of art media to create illustrations, graphic designs, advertising layouts, fashion drawings, product drawings, and display and package designs for the advertising field. The production artist's task is to prepare for printing and photographic reproduction.

Demand for qualified commercial artists is very favorable. The demand is for above-average students possessing both the discipline and creativity of the artist. Entry level positions exist in advertising agencies, art studios, and art departments in printing firms, publishing firms, and educational and service organizations. There are also opportunities for self-employed, free-lance artists.

IVY TECH'S PROGRAM

The Commercial Art program provides instruction for initial employment or upgrading skills. Prior art training or experience is helpful, but not necessary, as long as the student displays artistic ability. The college offers a variety of courses and it is possible that only one course will meet a student's education objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: drawing, composition and design, illustration media and techniques, visual arts, communications, typography, photography, darkroom processes, copywriting, layout, keylining, life drawing, airbrush retouching, storyboard techniques, and portfolio preparation. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits
Technical Certificate: a minimum of 45 credits
Associate in Applied Sciences: a minimum of 130 credits

PROGRAM COMPOSITION	Credits
1614 Fundamentals of Photography I	2
1615 Photographic Science and Theory I	3
1616 Studio Practice I	2
1627 Darkroom Techniques I	2
1810 Composition and Design Fundamentals	2
1813 Visual Arts Careers Orientation	2
8113 Oral Communications	3-4
1624 Fundamentals of Photography II	2
1625 Photographic Science and Theory II	3
1626 Studio Practice II	2
1628 Darkroom Techniques II	3
1645 Photographic Composition	3
1661 Photographic Science and Theory III	3
1636 Studio Practice III	2
1638 Darkroom Techniques III	2
1634 Sequential Photography	3
1642 Industrial and Commercial Techniques I	2
8403 Psychology of Advertising	3
8114 Technical Reporting	3
1644 Studio Practice IV	2
1652 Industrial and Commercial Techniques II	3
8111 Business Communications	3
1662 Industrial and Commercial Techniques III	3
1655 Basic Portrait Lighting	2
1635 Product Photography	3
8212 Business Mathematics	3
1650 Advanced Photographic Composition	2
1672 Industrial and Commercial Techniques IV	3
1654 Product Illustration	2
1660 Black and White Portraiture	2
1663 Color Portraiture	2
1664 Negative Retouching	2
1668 Special Commercial Techniques	3
1841 Airbrush Photo Retouching	2
8401 Human Relations	4
1681 Portfolio Preparation	3
1665 Custom Color Printing	2
8501 Field Study/Coop Ed	3
Electives	16
Total Credits:	113

ELECTIVES/REGIONAL OPTIONS

Any Graphic Media Division courses		1673	Advanced Product Photography	2
Any Business Division courses		1674	Journalistic and Editorial Photography	2
8307 General Chemistry	3	1675	Specialized Industrial Techniques	2
8501 Field Study/Coop Ed	1-15	1676	Advanced Darkroom Techniques	2
1610 Introduction to Photography (non-majors)	2	1677	Custom Quantity Printing	2
1611 Introduction to Photography (non-majors)	2	1678	Color Negative Retouching and Print Finishing	2
1632 Architectural Photography	2	1679	Market Survey	2
1633 Sensitometry	2	1680	Natural Light Portraiture	2
1670 Fundamentals of Optics	2			
1671 Advanced Portraiture	2			

For course descriptions see page 113

Commercial Art

CAREERS

Commercial artists perform many tasks involving the use of art media to create illustrations, graphic designs, advertising layouts, fashion drawings, product drawings, and display and package designs for the advertising field. The production artist's task is to prepare art for printing and photographic reproduction.

Demand for qualified commercial artists is very favorable. The demand is for above-average students possessing both the discipline and creativity of the artist. Entry level positions exist in advertising agencies, art studios, and art departments in printing firms, publishing firms, and educational and service organizations. There are also opportunities for self-employed, free-lance artists.

IVY TECH'S PROGRAM

The Commercial Art program provides instruction for initial employment or upgrading skills. Prior art training or experience is helpful, but not necessary, as long as the student displays artistic ability. The college offers a variety of courses and it is possible that only one course will meet a student's education objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: drawing, composition and design, illustration media

and techniques, visual arts, communications, typography, photography, darkroom processes, copywriting, layout, keylining, life drawing, airbrush retouching, storyboard techniques, and portfolio preparation. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Sciences: a minimum of 130 credits

PROGRAM COMPOSITION

Credits

1810	Composition and Design Fundamentals	2
1811	Introduction to Illustration Media	2
✓1812	Basic Drawing Fundamentals I	2
1813	Visual Arts Careers Orientation	2
✓1814	Basic Drawing Techniques	2
✓1815	Composition and Design Technology	2
✓1816	Illustration Techniques I	2
8113	Oral Communications	4
✓1820	Composition and Design II	2
✓1821	Illustration Media II	2
1822	Basic Drawing Techniques II	2
1823	Illustration Techniques II	2

1824 Typography Techniques	2	Electives	5
1830 Typographic Theory	3	1851 Illustration Concentration I	3
8216 Commercial Art Mathematics	2	1886 Portfolio Preparation II	3
Mathematics Elective	2	8501 Field Study/Coop Ed	3
1831 Black and White Illustration	2	Electives	6
1832 Introduction to Photography	3		
1834 Black and White Media Techniques	2		
1835 Sketch Book Drawing	2		
1836 Visual Arts Processes	2		
1869 Darkroom Processes	2		
8119 Copywriting	4		
1840 Layout Design Fundamentals I	2		
1842 Layout Design Techniques I	2		
1843 Life Drawing Anatomy	2		
1860 Keylining Techniques I	2		
1845 Life Drawing Techniques I	2		
8403 Psychology of Advertising	4		
1847 Keylining Fundamentals I	2		
1850 Layout Design Fundamentals II	2		
1854 Layout Design Techniques II	2		
1855 Creative Illustration Concepts	2		
1856 Creative Illustration Methods	2		
1841 Airbrush Photo Retouching	2		
1870 Keylining Fundamentals II	2		
1872 Keylining Techniques II	2		
Electives	2		
8401 Human Relations	4		
1853 Figure Rendering	2		
1857 Figure Drawing for Layout	2		
1858 Storyboard Techniques	2		
1861 Storyboard Concepts	2		
Elective	3		
8111 Business Communications	4		
1883 Specialized Layout Concepts	2		
1884 Specialized Layout Techniques	2		
1885 Portfolio Preparation I	3		
		Total Credits:	130
		ELECTIVES/REGIONAL OPTIONS	
		Any Graphics and Media Division courses	
		8110 Communications	4
		8501 Field Study/Coop Ed	3
		1212 Typewriting I	4
		1801 Basic Color Mixing and Figure Organization (non-majors)	3
		1802 Introduction to Aqua Media (non-majors)	3
		1803 Developmental Drawing Techniques I (non-majors)	3
		1804 Introduction to Video-Taping Processes	2
		1805 Introduction to Audio-Taping	2
		1806 Audio Visual Slide Production	2
		1825 Creative Typography	3
		1826 Airbrush Rendering	2
		1827 Mixed Media Figure Drawing	2
		1828 Multi Media Figure Drawing	2
		1833 Commercial Visual Arts History	2
		1859 Illustration Concentration II	3
		1868 Special Darkroom Techniques	3
		1871 AV Art Design	2
		1873 TV Art Design	2
		1874 Medical Illustration	2
		1875 Fashion Illustration	2
		1881 Technical Illustration	2
		5473 Architectural Rendering	3
		7510 Basic Drafting	
		For course descriptions see page 115	

Interior Design

CAREERS

The creative work of interior designers and decorators is being used increasingly by a variety of firms and businesses. Both men and women will find rewarding careers in this area.

Interior designers create an integrated interior environment for either proposed or existing structures. The integration may include space planning and the specification of materials as well as coordination of backgrounds through color scheming, lighting and sound control. The selection of furniture, equipment and accessories is an integral part of the design process.

A designer may work on residential or commercial interiors. Commercial interiors include offices, health care facilities, financial institutions, educational plants, industrial complexes, hotels, restaurants, ships, and aircrafts. Set design for motion pictures, television, and stage productions offer other challenges for the qualified designer.

Entry level positions as interior design assistants may be found with interior design departments or firms, sales consultants for furniture retailers, painting and decorating consultant or display coordinator. Other employment opportunities include buyer trainee for home furnishings departments, interior designer for an architectural or contracting firm, or self employment.

IVY TECH'S PROGRAM

The Interior Design program is designed to prepare students for initial employment or skill upgrading. An array of courses is offered to meet a variety of educational objectives. Career counseling on an individual basis can determine the course or courses required to meet those objectives. Different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science Degree.

The program includes courses from the following general areas: composition and design, color theory, art history, structural design, interior design, textiles, communications and human relations. The courses are presented in various formats such as group instruction, individual instruction and laboratory practice.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Sciences: a minimum of 96 credits

PROGRAM COMPOSITION

		Credits
8110	Communications	4
8113	Oral Communications	4
8401	Human Relations	4
8213	Mathematics of Finance I	3
8402	Applied Psychology	4
2010	Composition and Design I	4
2013	Fundamentals of Structural Design I	4
2020	Composition and Design II	4
2021	Textiles I	3
2022	Fundamentals of Interior Design I	3
2023	Fundamentals of Structural Design II	4
2031	Textiles II	4
2032	Fundamentals of Interior Design II	3
2050	Applied Interior Design I	5
2051	Display I	5
2052	Retailing	3
2053	Furniture Selection and Arrangement II	3
2062	Salesmanship	3
	Electives/Regional Options	
		29
	Total Credits:	96

ELECTIVES/REGIONAL OPTIONS

Any Business Division Courses		
Any Graphics and Media Division Courses		
8501	Field Study/Coop Ed	1-15
2011	Color Theory	4
2012	History of Art	3
2040	Consumer Education for Interiors	3
2041	Furniture Selection and Arrangement I	4
2042	Advanced Textiles	4
2055	Environmental Design	2
2057	Custom Textiles and Furniture	3
2060	Applied Interior Design II	5
2061	Display II	3
2063	Space Planning—Commercial	2
2064	Merchandise Buying Techniques	2
2070	Space Planning—Production (Mobile & Modular)	2
2071	Lighting Techniques	2
2072	Installation Procedures	2
2073	Kitchen and Bath Planning	2
2074	Office Landscaping	3
5473	Architectural Rendering	2
7510	Basic Drafting I	3
7511	Intermediate Drafting	3

For course descriptions see page 118

Printing

CAREERS

The printing industry provides employment for many people in a wide variety of specialties. Printing careers cover one or more areas of the printing operation such as type composition, photography, platemaking, presswork, or binding.

Opportunities for employment exist in printing and publishing firms, government agencies, paper products manufacturers, and in many large corporations, banks, insurance companies, colleges, and travel organizations which have their own printing facilities. Nearly all entry level positions require on-the-job training before advancement can occur.

IVY TECH'S PROGRAM

The Printing program provides instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses from the following areas: art and camera preparation, camera and darkroom fundamentals, layout and stripping flats, platemaking, offset presswork, composition, press troubleshooting, production control, special effects, and ink and paper for offset. The courses are presented in various formats such as group or individual instruction, and laboratory practice. The program may also provide for a field project.

PROGRAM LEVEL

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 98 credits

PROGRAM COMPOSITION

Credits

2211 Art and Copy Preparation	2
2214 Camera Fundamentals	2
2212 Layout and Stripping Flats	2
2215 Plate Making Fundamentals	2
2213 General Printing Process	2
2216 Offset Presswork	3
Elective	3
2221 Camera-Line and Halftone	2

2222 Stripping Line and Halftone Negative	2
2223 Photo Offset Fundamentals	2
2225 Offset Presswork I	3
2210 Type Composition for Reproduction	2
Mathematics Elective	3
Elective	3
2240 Special Effective Camera Work	2
2232 Offset Presswork Operation	2
2233 Offset Presswork II	3
2224 Printing Estimating	3
2244 Ink and Paper for Offset	2
Elective	3
Elective	3
2242 Press Troubleshooting	2
2241 Printing Production Practices	2
2243 Offset Presswork III	3
2231 Advanced Camera	2
2252 Manufacturing and Organization	3
8112 Technical Communications	3
2251 Special Problems in Offset Preparation	3
2255 Printing Specialization	4
0323 Business Principles and Organization	3
Elective	3
Elective	3
8501 Field Study/Coop Ed	4
2262 Production Control	3
8406 Employment Orientation	2
8401 Human Relations	4
Elective	3

Total Credits: 98

ELECTIVES/REGIONAL OPTIONS

Any Electronics elective	3
8111 Business Communications	4
8113 Oral Communications	3-4
8114 Technical Reporting	3
8118 Effective Reading	2
0110 Accounting Principles I	4
1212 Typewriting I	4
2253 Supervision I	3
2254 Supervision II	3
2263 Introduction to Photo Typesetting	3
2264 Preventative Maintenance	2

For course descriptions see page 120

Library Resource Aide

CAREERS

The library resource aide supports and assists the professional librarian in providing information. A library aide assists in functions such as library circulations, referencing, technical processes, audio-visual, children's services, clerical activities and other related activities.

The employment outlook for library aides and assistants is promising. Because opportunities are favorable, the library aide can find work in large or small communities. Entry level positions may be found with libraries, schools, colleges, universities, business and industry, or government.

IVY TECH'S PROGRAM

The Library Resource Aide program provides instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses from the following areas: library and learning resources fundamentals, library forms and records, typing, library technical services, AV productions, communications and office procedures. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

PROGRAM LEVEL

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 67 credits

PROGRAM COMPOSITION

	Credits
1212 Typewriting I	4

8110 Communications	4
2417 Library and LRC Fundamentals I	3
2418 Library and LRC Fundamentals II	3
2419 Library and LRC Fundamentals III	3
2424 Library Technical Services I	3
2426 Library Technical Services II	3
1222 Typewriting II	4
8402 Applied Psychology or	4
8401 Human Relations	4
2425 Audio Visual Productions	3
2427 Library Operations and Practices	5
2433 Library Public Services I	3
2434 Library Public Services II	2
2415 AV Equipment Operations and Maintenance	3
8113 Oral Communications	4
1241 Clerical Office Procedures	3
8501 Field Study/Coop Ed	7
Electives	6

Total Credits: 67

ELECTIVES/REGIONAL OPTIONS

Any Science courses	
Any Graphics and Media courses	
8111 Business Communications	4
0110 Accounting Principles I	4
0571 Introduction to Data Processing	3
1223 Key Device Training	3
1832 Introduction to Photography	3
1869 Darkroom Processes	3
2441 Studio Lighting and Set Up Techniques	3
2442 Introduction to Video Production	3
2443 Introduction to Health Science Library	3
3724 Medical Linguistics I	2

For course descriptions see page 121



HEALTH OCCUPATIONS

The delivery of health care services is one of the nation's fastest growing industry. With the advent of more sophisticated medical science, career opportunities in this field continue to grow. The concern for extending medical cures and preventative medical care to increasing numbers of people has also resulted in a significant need for technicians and aides to assist doctors, dentists, and scientists in providing quality health care service.

To meet this need, Indiana Vocational Technical College offers a variety of programs in the health-related field. These programs are designed to meet available national and state certification and licensure standards. Each program is developed with the aid of local and statewide advisory committees to ensure that Ivy Tech graduates can meet high standards on the job market.

Each health occupations program emphasizes instruction in principles and practices of its specific technical area and includes related education integrated throughout the program. An important part of health occupations programs is the clinical experience students gain in cooperating hospitals, nursing homes, laboratories, and other health care institutions.

**Child Care
Medical Laboratory
Dental Assistant
Emergency Care Technician
Culinary Arts
Dietary Assistant
Medical Assistant
Operating Room Technician
Practical Nursing
Radiologic Technician
Respiratory Therapy**

Special courses are also offered in Emergency-Medical Technician-Ambulance and Nurses Aide/Orderly.

Child Care

CAREERS

A child care specialist can serve as assistant teacher or group leader under the supervision of a master teacher in a day care center, nursery school, kindergarten, day nursery or programs to culturally disadvantaged children. Child care workers must understand early childhood development, parent-child relationships and the handling of groups of young children.

The competition for child care job opportunities is high and the demand for well-trained personnel is expected to continue increasing. Entry level positions may be found in nursery schools, day care centers, teacher assistants, and public or private homes for children. Advancement is commensurate with additional training and experience.

IVY TECH'S PROGRAM

The Child Care program provides instruction for initial employment. Through observation and practice, the student is provided instruction in such activities as music, art, storytelling and language development. During field experiences, the student progresses from observation to supervised student/assistant teaching and observes and becomes part of parent groups.

Students successfully completing 49 credits in certain prescribed courses can receive a Technical Certificate as a Child Care Specialist I (CCSI). At the completion of the program students are awarded an Associate in Applied Science degree in Child Care Technology as Child Care Specialist II (CCSII).

The program includes courses in the following areas: child growth and development, first aid and safety, nutrition, recreation, creative activities, art, music, accounting, and audio visual materials. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for on-the-job training through which the student gains actual work experience.

PROGRAM LEVEL

Technical Certificate: a minimum of 49 credits
Associate in Applied Science: a minimum of 91 credits

PROGRAM COMPOSITION

2610	Child Growth and Development—Birth to 6 yrs.	4
2611	Group Care of Children I	3
2612	Childhood Health	3
2613	Orientation to Child Care Service	3
2624	Child Care Participation I	6
2625	Legal Aspects of Child Care	3
2626	Science and Social Studies for Pre-School Children	3
2630	Recreational and Creative Activities for Children I	3
2633	Community Resources	3
2634	Child Care Participation II	6
2637	Child Care Service I	2
2641	Childhood Movements and Creative Activities	3
2642	Menu Planning and Nutrition	3
2643	Preschool Art	3
2645	Child Care Participation III	6
2647	Child Care Service II	2
2651	Language Arts for Children	3
2653	Business Principles	3
2654	Child Care Participation IV	6
2655	Bookkeeping	3
2657	Child Care Service III	2
2660	Preschool Music	3
2661	Management Techniques	4
2663	Audio Visual Materials and Methods	3
2665	Child Care Participation V	6
2667	Child Care Service IV	2
Total Credits:		91

For course descriptions see page 124

Medical Laboratory

CAREERS

Medical laboratory technicians perform a wide range of tests and laboratory procedures that require a high level of skill. They usually work under the supervision of a medical technologist, pathologist, or scientist. Technicians may work in several areas or specialize in one field.

Laboratory assistants are also members of the medical laboratory team. Assistants require a shorter training period and aid medical technologists and technicians in routine tests and related work. Like medical technicians, laboratory assistants may work in several areas or specialize in one field.

Employment opportunities for medical laboratory workers are expected to increase rapidly over the next few years. Competition for the choice positions may be fairly strong. Entry level positions such as laboratory assistant or medical laboratory technician may exit in hospitals, independent laboratories, physicians' offices, clinics, public health agencies, pharmaceutical firms, and research institutions.

IVY TECH'S PROGRAM

The National Accreditation Agency for Clinical Laboratory Sciences reviews medical laboratory technology programs for the AMA Council on Medical Education to assure minimum standards are met. Graduates from approved Medical Laboratory Technician programs are eligible for the American Society for Clinical Pathologist (ASCP) Board of Registry. After earning a satisfactory score on this examination, the graduates can use the initials MLT (ASCP) after their names. The college awards an Associate in Applied Science degree for successful completion of the Medical Laboratory Technician program. The programs include courses in the following general areas: bacteriology, parasitology, chemistry, hematology, serology, anatomy and physiology, clinical blood bank, pathology, instrumentation, technical algebra, human relations, statistics, and data processing.

Students who satisfactorily complete the prescribed studies are eligible and expected to take the Certified Laboratory Assistants' national examination. Satisfactory scores on this examination entitles the graduates to use the title "Certified Laboratory Assistant" (CLA) after their names. The college

awards a Technical Certificate for successful completion of the Medical Laboratory Assistant program.

PROGRAM LEVEL

Technical Certificate: a minimum of 66 credits

Associate in Applied Science: a minimum of 111 credits

Medical Laboratory Technician

PROGRAM COMPOSITION

	Credits
2811 Fundamentals of Lab. Tech.	6
9353 Integrated Basic Science I	4
9350 Medical Law & Ethics I	2
2851 Chemistry for MLT's	3
9305 Technical Math for Health Occupations	5
2832 Serology Techniques	2
9354 Integrated Basic Science II	4
2860 Biochemistry	3
2863 Instrumentation	4
2814 Routine Analysis Techniques	3
2813 Blood Bank Techniques	3
2823 Bacteriology & Parasitology Techniques	4
2820 Hematology Techniques	6
8210 Statistics	3
Elective	4
2830 Chemistry Techniques	6
2854 MLT I—Lecture	4
2864 MLT II—Lecture	4
Elective	3
2840 Chemistry Application	8
2873 Exam Review	5
2831 Hematology Applications	8
2842 Serology Applications	2
2870 Pathology	3
2821 Blood Bank Applications	3
2822 Routine Analysis Applications	3
2841 Bacteriology & Parasitology Applications	6
Total Credits:	111

ELECTIVES/REGIONAL OPTIONS

8112 Technical Communications	3
8113 Oral Communications	3-4
8401 Human Relations	4
8402 Applied Psychology	4
0571 Introduction to Data Processing (non-major)	3

2815	Clinical Practicum	1	2822	Routine Analysis Applications	3
2855	Medical Laboratory Technology I	2	2823	Bacteriology & Parasitology Techniques	4
2865	Medical Laboratory Technology II	2	2830	Chemistry Techniques	6
			2831	Hematology Applications	8
			2832	Serology Techniques	2
			2840	Chemistry Applications	8
			2841	Bacteriology and Parasitology Applications	6
			2842	Serology Applications	2

For course descriptions see page 125

Medical Laboratory Assistant

PROGRAM COMPOSITION	Credits
9350 Medical Law and Ethics	2
9353 Integrated Basic Science I	4
9355 Medical Terminology	2
2811 Fundamentals of Laboratory Techniques	6
2813 Blood Bank Techniques	3
2814 Routine Analysis Techniques	3
2820 Hematology Techniques	6
2821 Blood Bank Applications	3

2822	Routine Analysis Applications	3
2823	Bacteriology & Parasitology Techniques	4
2830	Chemistry Techniques	6
2831	Hematology Applications	8
2832	Serology Techniques	2
2840	Chemistry Applications	8
2841	Bacteriology and Parasitology Applications	6
2842	Serology Applications	2

Total Credits: 66

ELECTIVE/REGIONAL OPTION

2815 Clinical Practicum	1
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For course descriptions see page 125

Dental Assistant

CAREERS

The dental assistant carries out various duties that do not require the dentist's professional knowledge and skill. A dental assistant can see to a patient's comfort, prepare the patients for treatment, obtain the patient's dental records, and hand the dentist proper instruments and materials. In many situations, the dental assistant performs duties such as office administrator, laboratory technician or x-ray technician. Dental assistants usually find job opportunities with organizations such as private dental offices, dental schools, hospital dental departments, public health departments, or private clinics. Entry level employment opportunities for dental assistants are expected to be excellent over the next few years.

IVY TECH'S PROGRAM

The Dental Assistant program provides instruction for initial employment. Successful completion of this one year program leads to a Technical Certificate.

The program includes courses in the following areas: dental anatomy and physiology, microbiology, pharmacology, oral pathology, dental materials, chairside assisting, typing, communications, human relations, and record keeping. The courses are

presented in various formats such as group or individual instruction and laboratory practice. A large portion of the student's time is spent in laboratory work and clinical experiences.

Graduates of the program are eligible for and expected to take the certification examination offered by the Certifying Board of the American Dental Assistant Association, Inc. Successful completion of this certifying examination allows dental assistants to use the title "Certified Dental Assistant," and the initials C.D.A. after their names.

PROGRAM LEVEL

Technical Certificate: a minimum of 77 credits

PROGRAM COMPOSITION	Credits
3008 Dental Anatomy	4
3003 Dental Materials and Laboratory I	4
3001 Introduction to Dental Practice	2
9353 Integrated Basic Science I	4
1212 Typewriting I	4
3007 Preclinical Practice I	5
3010 Dental Materials and Laboratory II	4
3011 Preclinical Practice II	5

3012 Oral Pathology/Microbiology	4	8401 Human Relations	4
9354 Integrated Basic Science II	4		Total Credits: 77
8111 Business Communications	4		
3034 Dental Radiography	5		
3038 Clinical Practice I	3	** Each student is required to demonstrate competency in typing at 40 wpm and pass a departmental performance test prior to enrolling in the second quarter of the program.	
3043 First Aid and Pharmacology	3		
3039 Dental Office Management	4		
3044 Clinical Practice II	11		
3013 Preventive Dentistry/Diet and Nutrition	3	For course descriptions see page 126	

Emergency Care Technician

CAREERS

The emergency care technician performs routine procedures and emergency treatment on patients under the supervision of a nursing team leader or physician. These technicians are skilled in the use and care of equipment required to accomplish specific tasks in the hospital's critical care areas and especially in the emergency unit.

As with most health related occupations, the job opportunities for trained emergency care technicians are expected to improve over the next few years. Entry level jobs may exist in hospital emergency wards, trauma centers, critical care centers, hospital and independent ambulance service organizations as needs are identified and regulatory bodies will permit.

IVY TECH'S PROGRAM

The Emergency Care program can provide instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, successful completion of the entire program will lead to a Technical Certificate.

The program includes courses in the following areas: basic science, medical law, ambulance techniques, cardiology, disease conditions, pharmacology, medical/surgical techniques, emergency room techniques and clinical experience. The Basic

Emergency Medical Technician-Ambulance Techniques course provides instruction for a certification examination by the Commission on Emergency Medical Services of the State of Indiana as Emergency Medical Technician-Ambulance (EMT-A). The courses are presented in various formats such as group or individual instruction and laboratory practice.

PROGRAM LEVEL

Occupational Certificate as Emergency Medical Technician-Ambulance: 5 credits

Technical Certificate: a minimum of 64 credits

PROGRAM COMPOSITION

Credits

9353 Integrated Basic Science I	4
9350 Medical Law and Ethics	2
3219 Basic Emergency Medical Technician Ambulance Techniques	5
3215 Orientation to Emergency Medical Services	5
9354 Integrated Basic Science II	4
3221 Basic Cardiology	4
9356 Disease Conditions I	3
9358 Pharmacology I	3
3228 Medical/Surgical Techniques I	3
8401 Human Relations	4
3224 Advanced Cardiology	4
9357 Disease Conditions II	3
3233 Pharmacology	

3235	Medical/Surgical Techniques II	3	3225	Emergency Care Techniques II	5
3236	Clinical Experience II	5	3243	Seminar in ER Techniques	3
3242	Clinical Experience III	9	3244	Practicum	5
	Total Credits:	64	3246	Practicum in Emergency Care	12
			3247	Basic EMT Refresher Course	2
			3248	Basic Life Support Concepts & Skills	3

ELECTIVES/REGIONAL OPTIONS

3216	Clinical Experiences (AMB) I	3
3217	Emergency Care Techniques I	4

For course descriptions see page 127

Culinary Arts

CAREERS

Food service workers make up one of the largest and fastest growing occupational groups in the nation's labor force. These workers are employed in such businesses as restaurants, hotel/motel dining rooms, department stores, factories, hospitals, nursing homes, or private clubs.

The demand for well trained food service personnel is expected to continue increasing over the next few years. Entry level opportunities such as boiler-workers, second cooks, fry cooks, caterers, or beginning managerial and supervisory positions can lead with experience to positions of chef or manager.

IVY TECH'S PROGRAM

The Culinary Arts program provides instruction for initial employment leading to a career in food service. Successful completion of this one year program leads to a Technical Certificate.

The program includes courses in the following areas: volume food preparation, nutrition, volume food service, food and beverage management, institutional foods preparation and service, purchasing, gourmet foods preparation, finance, human relations, and communications. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVEL

Technical Certificate: a minimum of 60 credits

PROGRAM COMPOSITION

Credits

3412	Introduction to Volume Food Preparation	5
3414	Introduction to Volume Food Service	3
8212	Business Mathematics	3
8112	Technical Communications	3
3421	Nutrition	4
3422	Volume Food Preparation	5
3424	Volume Food Service	3
8113	Oral Communications	3-4
3432	Food & Beverage Management & Services	3
3433	Food Production Principles	3
3434	Institutional Food Preparation	5
3435	Institutional Foods Service	3
	Elective	1
3441	Food & Beverage Purchasing & Service	3
3443	Gourmet Food Preparation	6
8401	Human Relations	4
	Elective	3

Total Credits: 60

ELECTIVES/REGIONAL OPTIONS

3442	Practicum	1-4
8501	Field Study/Coop Ed	1-4

For course descriptions see page 129

Dietary Assistant

CAREERS

The dietary assistant is a member of the dietetic team, functioning under the close supervision of a Registered Dietitian or dietetic technician. The dietary assistant participates in the food service operation by assuming delegated responsibilities in the area of menu planning, sanitation, personnel management, cost control and food preparation.

IVY TECH'S PROGRAM

The Dietetic Assistant program provides instruction for initial employment in food service. The program meets the requirements of the American Dietetic Association and the Indiana State Board of Health.

This part-time program includes courses in nutrition, diet therapy, personnel management, sanitation, cost control and food preparation as well as practical experience under the supervision of a Registered Dietitian.

PROGRAM LEVEL

Occupational Certificate: a minimum of 15 credits

PROGRAM COMPOSITION	Credits
3607 Nutrition and Diet Therapy	5
3608 Dietary Management I	5
3609 Dietary Management II	5
3610 Nutrition	2
3611 Diet Therapy	3
3612 Nutrition Diet Therapy Practicum	1
3613 Personnel Management	2
3614 Personnel Management Practicum	1
3615 Sanitation	2
3616 Sanitation Practicum	1
3617 Cost Control	2
3618 Cost Control Practicum	1
3619 Food Preparation	2

Region 01—Courses 3607, 3608, 3609
Total 15 Credits

Region 02—Courses 3610 through 3619
Total 17 Credits

For course descriptions see page 130

Medical Assistant

CAREERS

The medical assistant helps the physician examine and treat patients and performs the administrative tasks to keep an office running smoothly. The duties of a medical assistant include preparing patients for physical examination, cleaning and sterilizing equipment and maintaining supplies, collecting specimens, performing simple laboratory tests, and carrying out the business office activities of the doctor.

Employment opportunities for well trained medical

assistants are expected to be excellent over the next few years. Entry level positions may be found in physicians' offices, medical clinics, hospitals, nursing homes, health insurance industry, and other health care agencies.

IVY TECH'S PROGRAM

The Medical Assistant program provides instruction for

initial employment. Students who successfully complete 46 credits in certain prescribed courses may receive a Technical Certificate. After successful completion of six quarters, students are awarded an Associate in Applied Science degree. All graduates of AAMA/AMA accredited programs are eligible for and expected to take the certification examination offered by the American Association of Medical Assistants. Successful completion of this examination entitles the graduates to use the letters CMA after their names signifying them as Certified Medical Assistants.

PROGRAM LEVEL *

Technical Certificate: a minimum of 46 or more credits for the 3-quarter program or 69 credits for the 4-quarter program.

Associate in Applied Science: a minimum of 92 credits.

* The Medical Assistant program is undergoing extensive revision. The programs offered in various regions may not be consistent with this catalog. Technical Certificate programs are three or four quarters in length as a regional option during 1977-78.

PROGRAM COMPOSITION	Credits
9353 Integrated Basic Science I	4
9350 Medical Law and Ethics or	2
3737 Medical Ethics and	2
3736 Medical Law	2
3712 Medical Office Procedures Clinical I	4-6
3713 Medical Office Bookkeeping	4
9354 Integrated Basic Science II	4
3721 Medical Office Procedures, Administrative	4
3722 Medical Typewriting I or	3
3723 Medical Typewriting	2
9355 Medical Terminology	2
3730 Medical Assistant Laboratory Techniques or	4
3734 Medical Laboratory Techniques I and	2
3735 Medical Laboratory Techniques II	3

3731 Medical Assistant Clinical Experience I	4-5
3732 Medical Office Communications or	4
3738 Written Communications	2
3733 Medical Typewriting II	3
3740 Medical Linguistics II	3
3741 Medical Office Procedures Clinical II	4-6
8402 Applied Psychology	4
3743 Machine Transcription, Medical I or	3
3744 Machine Transcription, Medical I	2
8308 General Microbiology	3
3750 Medical Office Procedures Clinical III	4-5
3751 Machine Transcription, Medical II	3
8111 Business Communications	4
3753 Drugs and Solutions	2
0571 Introduction of Data Processing or	3
0510 Introduction to Data Processing	5
3761 Community Health	2
8113 Oral Communications	2-4
3763 Medical Office Management	3
3764 Payroll and Taxes	3
8401 Human Relations	4
3765 Medical Insurance	2
9358 Pharmacology	3
3766 Advanced American Red Cross First Aid and Emergency Care	3
3766 Advanced American Red Cross First Aid and Emergency Care	3
1212 Typewriting I	3
9356 Disease Conditions I	3
9357 Disease Conditions II	3
3768 Comprehensive Certification Review	3
3769 Medical Assistant Administrative Externship	4
Technical Certificate: 3 quarters	46
Technical Certificate: 4 quarters	69
Associate of Applied Science: 6 quarters	92

For course descriptions see page 130

Operating Room Technician

CAREERS

The operating room technician (ORT), occasionally called a surgical technician, assists surgeons and anesthesiologists before, during, and after surgery. The ORT also helps set up the operating room, in patient preparation, moves the patient to the operating room, during surgery, transfer patients to the recovery room, and in cleaning and maintaining equipment.

Employment opportunities for operating room technicians are expected to be good over the next few years. Entry level positions may be found in hospitals, the armed forces, or other institutions that have hospital facilities.

IVY TECH'S PROGRAM

The Operating Room Technician program provides instruction for initial employment and taking the comprehensive certification examination given by the Association of Operating Room Technicians. This association awards a certificate to applicants who pass this examination. A Certified Operating Room Technician (CORT) is recognized as competent in the field and is generally paid a higher salary. Successful completion of the one year program leads to a Technical Certificate.

The program includes courses in the following areas: surgical anatomy, operating room techniques, medical ethics, personal health, microbiology, surgical procedures, and clinical experience. The courses are presented in various formats such as group or individual instruction, laboratory practice, and clinical experience.

PROGRAM LEVEL

Technical Certificate: a minimum of 70 credits

PROGRAM COMPOSITION

	Credits
4210 Surgical Anatomy I or	5
9353 Integrated Basic Science I	4
4211 Operating Room Techniques I	9
9350 Medical Law and Ethics	2
4213 Microbiology for Operating Room Technicians	3
4220 Surgical Anatomy II or	3
9354 Integrated Basic Science II	4
4221 Surgical Procedures I	5
4222 Clinical Applications I	8
4223 Operating Room Techniques II	3
4230 Surgical Procedures II	5
4231 Clinical Applications II	10
4240 Clinical Applications III	10
Electives to total	7

Total Credits: 70

ELECTIVES/REGIONAL OPTIONS

8401 Human Relations	4
4232 Obstetrical Techniques	3
4241 Emergency Room Techniques	2
4242 Surgical Procedures III	5
4244 Operating Room Medical Terminology	2
9355 Medical Terminology	2
9358 Pharmacology	3

For course descriptions see page 132

Practical Nursing

CAREERS

Practical nurses help care for the physically or mentally ill and infirm. Under the direction of physicians and professional nurses, they provide nursing care that requires technical knowledge but not the training necessary for a registered nurse. A practical nurse performs such duties as bedside care, taking and recording temperatures and blood pressures, performing selected therapeutic massages, changing dressings, administering certain prescribed medicines, bathing patients, reporting and recording observations, and assisting in other ways.

The employment outlook for practical nurses is expected to be very good during the next few years. Entry level career opportunities may be found in hospitals, nursing homes, clinics, doctors' offices, sanitariums, and other long term facilities. Other possible opportunities are in public health agencies, welfare and religious organizations, educational institutions, or self employment.

IVY TECH'S PROGRAM

The Practical Nursing program provides instruction for initial employment in the nursing field. The program meets the requirements of the Indiana State Board of Nurses' Registration and Education and prepares candidates for the examination required for licensure as a practical nurse in Indiana. Graduates of the one-year program are awarded a Technical Certificate.

The Practical Nursing program includes courses in basic science, nursing skills and techniques, medical surgical nursing, maternal child nursing as well as clinical experience in health care agencies. Clinical experience is under the direct supervision of the Practical Nursing faculty of the college.

PROGRAM LEVEL

Technical Certificate: a minimum of 70 credits

PROGRAM COMPOSITION

	Credits
4409 Basic Science for PN I	4
4410 Basic Science for PN II	4
4411 Nursing Techniques and Care I	3
4420 Nursing Techniques and Care II	3
4430 Nursing Techniques and Care III	3
4443 Nursing Techniques and Care IV	3
4450 Nursing Techniques and Care V	3
4421 Medical Surgical Nursing I	4
4423 Medical Surgical Clinical Nursing I	3
4431 Medical Surgical Nursing II	4
4432 Medical Surgical Clinical Nursing II	3
4422 Nutrition and Diet Therapy	2
4444 Medical Surgical Nursing III	4
4445 Medical Surgical Clinical Nursing III	4
4451 Medical Surgical Nursing IV	3
4452 Medical Surgical Clinical Nursing IV	3
4446 Community Health Resources	2
4440 Maternal Health Nursing	3
4442 Maternal Clinical Nursing	4
4453 Pediatric Nursing	3
4454 Pediatric Clinical Nursing	3
4441 Personal Vocational Relationships	2
Total Credits:	
	70

ELECTIVES:

8401 Human Relations	4
4232 Obstetrical Techniques	3
4241 Emergency Room Techniques	2
4242 Surgical Procedures III	5
4244 Operating Room Medical Terminology	2
9355 Medical Terminology	2
9358 Pharmacology	3

For course descriptions see page 133

Radiologic Technician

CAREERS

The radiology technician prepares patients for X-ray, positions them and, after determining the proper voltage, current, and exposure time, operates the X-ray equipment. They are usually supervised by radiologists (physicians who specialize in the use of X-rays).

Employment opportunities in this field are expected to expand rapidly over the next few years as X-ray equipment is increasingly used to diagnose and treat diseases. Most entry level opportunities are in hospitals, while organizations such as medical laboratories, physicians' and dentists' offices or clinics, federal and state health agencies, and educational institutions may also employ radiology technicians.

IVY TECH'S PROGRAM

The Radiologic Technician program provides instruction for initial employment as a radiologic technologist. It is a two-year program offered by the college as a cooperative educational institution affiliated with hospital approved schools of Radiologic Technology accredited by the American Registry of Radiologic Technologists. The college awards an Associate in Applied Sciences degree to successful graduates.

The program includes courses in the following areas: principles of radiologic technique, exposure, therapy, positioning, protection, ethics, and is conducted with clinical practice and supplemental instruction in the accredited hospitals.

PROGRAM LEVEL

Associate in Applied Sciences: a minimum of 133 credits

PROGRAM COMPOSITION		Credits
4609	Nursing Procedures for X-ray Technicians	2
9353	Integrated Basic Science I	4
9305	Technical Mathematics for Health Occupations	5
9350	Medical Law and Ethics	2-3
4619	Orientation to X-ray Technology	6
9355	Medical Terminology	2
4613	Radiation Physics I	3
9354	Integrated Basic Science II	4
4626	Principles of Radiographic Exposures I	2
4627	Radiographic Positioning I	2
4628	X-ray Clinical Education I	8

4629	Clinical Theory I	3
4622	Radiation Physics II	3
4631	Principles of Radiographic Exposures II	2
4632	Radiographic Positioning II	2
4636	Clinical Theory II	3
4637	X-ray Clinical Education II	10
4652	Special Procedures I	2
4640	Principles of Radiographic Exposures III	2
4641	Radiographic Positioning III	2
4646	Clinical Theory III	3
4647	X-ray Clinical Education III	10
	Elective	2
4651	Radiographic Positioning IV	2
4656	Departmental Administration	3
4657	Clinical Theory IV	3
4658	X-ray Clinical Education IV	3
4659	Introduction to Radiation Therapy and Nuclear Medicine	2
4662	Special Procedures II	2
4666	Clinical Theory V	3
4667	X-ray Clinical Education V	3
	Electives	4
4671	Special Procedures III	2
4676	Clinical Theory VI	3
4677	X-ray Clinical Education VI	3
	Electives	4
4681	Equipment Maintenance	2
4685	General Examination Review	4
4686	Clinical Theory VII	3
4687	X-ray Clinical Education VII	3

Total Credits: 133

ELECTIVES/REGIONAL OPTIONS

8110	Communications	4
8113	Oral Communications	3-4
8308	General Microbiology	3
8401	Human Relations	4
8402	Applied Psychology	4
0110	Accounting Principles I	4
0913	Techniques of Supervision I	3
1212	Typewriting I	4
3219	Basic Emergency Medical Technician-Ambulance	5
3671	Community Health	2
4697	Seminar for Radiologic Technicians	1
9356	Disease Conditions I	3
9357	Disease Conditions II	3

For course descriptions see page 135

Respiratory Therapy

CAREERS

Respiratory therapy workers, sometimes called inhalation therapy workers, treat patients with cardiorespiratory problems. Their duties involve the therapeutic use of medical gases, air and oxygen administering apparatus, environmental control systems, humidification and aerosols, drugs and medications, ventilatory control, postural drainage, chest physio-therapy and breathing exercises, respiratory rehabilitation, assistance with cardiopulmonary resuscitation, and the maintenance of natural, artificial and mechanical airways.

Employment opportunities for respiratory therapy workers are expected to be good during the next few years. Entry level positions may be found in hospitals, physicians' offices, and clinics, oxygen equipment rental companies, ambulance services, nursing homes and universities.

IVY TECH'S PROGRAM

The Respiratory Therapy Technician program provides instruction for initial employment. The successful completion of this one-year program leads to a Technical Certificate awarded by the college.

The program includes courses in the following areas: anatomy and physiology, respiratory therapy science, nursing techniques, cardiopulmonary physiology, clinical medicine, and clinical experience. Clinical experience is provided in cooperating hospitals and clinics under the supervision of a physician and respiratory therapist. The courses are presented in various formats such as group or individual instruction, laboratory practice, and clinical experience.

PROGRAM LEVEL*

Technical Certificate: a minimum of 67 to 85 credits

*The Respiratory Therapy program is undergoing revisions and may, by 1980, be offered only at the

Associate Degree level. In the interim, four or five quarter Technical Certificate programs will be available in certain regions.

PROGRAM COMPOSITION		Credits
4810	Basic Science or	4
8307	General Chemistry	3
9353	Integrated Basic Science	4
4812	Respiratory Therapy Science I	6
4813	Nursing Techniques	2-3
4820	Cardiopulmonary Physiology	4
4821	Respiratory Therapy Science II	6
4822	Respiratory Therapy Application I or	5
9305	Technical Math for Health Occupations	5
4823	Clinical Practicum I	4
4830	Laboratory Data or	3
4844	Cardiopulmonary Laboratory Diagnosis	4
4831	Clinical Medicine or	4
4837	Pulmonary Pathophysiology	4
4832	Respiratory Therapy Applications II or	5
4835	Respiratory Therapy Science III	6
4833	Clinical Practicum II	6-8
4841	Clinical Practicum III	11-13
Regional Options (4 or 5 quarter)		0-16
Total Credits:		67-85

ELECTIVES/REGIONAL OPTIONS

8308	General Microbiology	3
8402	Applied Psychology	4
4845	Seminar	2
9350	Medical Law and Ethics	2
9354	Integrated Basic Science II	4
9358	Pharmacology	3

For course descriptions see page 137

TRADE & TECHNICAL PROGRAMS

The increased mechanization of American industry, coupled with the ever-changing state-of-the-art in the technical fields, has created a tremendous need for broadly trained skilled technicians who have additional technical preparation above the high school level.

To meet this need, the college offers a variety of programs in the major trade and technical career fields. Many of these programs lead to the Associate in Applied Science degree although a number of shorter-term programs are available.

All programs in the Trade and Technical career cluster emphasize laboratory and shop work as a primary means of skill development, thus reinforcing the often stated demand of employers that graduates must know the How as well as the Why of their chosen career fields.

The general or related educational development of students is given a high priority in each trade and technical program. In today's constantly changing technological world, students must be prepared to adapt quickly to new ideas and procedures and to communicate effectively with a broad range of people, both in and out of their specific occupational areas.

Ivy Tech's curriculum design integrates related education studies in each technical program, thus stressing the working relationship between the highly skilled technician and the broader requirements of the world environment. The subjects carried include mathematics, science, communications, social science.

- Agricultural Equipment**
- Applied Fire Science**
- Architectural Drafting**
- Industrial Drafting**
- Automotive Body Repair**
- Automotive Service**
- Diesel Power**
- Building Construction**
- Electronics Communications**
- Electronics**
- Cable Television**
- Heating, Air Conditioning and Refrigeration**
- Industrial Maintenance**
- Surface Mining Operations**
- Machine Tool**
- Pollution Treatment**
- Welding**

Agricultural Equipment

CAREERS

Increased specialization and mechanization in the agriculture industry have created a higher demand for skilled technicians. These technicians are needed to fill positions in the manufacturing, sales and service of agricultural and garden equipment.

Entry level employment opportunities may be found with agricultural or industrial equipment manufacturers, retail and distributing organizations, farm supply and food processing industries, and construction contractors and road builders. Agriculture occupations afford many opportunities for employment and advancement.

IVY TECH'S PROGRAM

The Agricultural Equipment program offers students thorough understanding of servicing, repairing and maintaining all types of agricultural equipment. Students can specialize in either agricultural equipment or industrial equipment after the first three quarters of the program. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The agricultural equipment option includes courses in the following areas: plows, disks, harrows, cultivators, fertilizer applicators, forage and grain harvesting equipment, hay balers, grain dryers, and processing and handling equipment.

The industrial equipment option includes courses in the following areas: back hoes, earth movers, graders, skidders, bulldozers, loaders and forestry equipment.

The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for on-the-job training through which a student gains actual work experience.

PROGRAM LEVELS

Occupational Certificates: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 97 credits

PROGRAM COMPOSITION

	Credits
8112 Technical Communications	3
5113 Principles of Internal Combustion Engines	2
5154 Farm Machinery I	3
5114 Direct Current Fundamentals (6-21-24)	2
5115 Hydraulic Fundamentals	2
Welding Elective	3
8114 Technical Reporting	3
5142 Lawn and Garden Equipment	3
5145 Farm Machinery II	3
5125 Open Center Hydraulic Systems	3
5124 Manual Transmissions	3
8113 Oral Communications	3-4
5164 Farm Machinery III	3
5126 Closed Center Hydraulic Systems	3
5127 Hydraulic Assist Transmissions	3
5847 Air Conditioning—Theory, Service and Components	2
5848 Air Conditioning—Diagnosis and Repair	2
5123 Diesel Engines I	3
5116 Tractor Engines	3
5156 Hydrostatic Hydraulics Systems	3
Mathematics elective	4
Electives	4
5133 Environmental Control	4
5132 Diesel Engines II	3
5134 Parts Department Management	3
Electives	7
5135 Diesel Engines III	2
5136 Hydrostatic Transmissions	3
5137 Service Department Management	3
8401 Human Relations	4
Electives	5
Total Credits:	97

ELECTIVES/REGIONAL OPTIONS

Any communication courses	
Any mathematics and/or science courses	
Any Business Division courses	
8402 Applied Psychology	4
8501 Field Study/Coop Ed	1-15
5130 Practicum	1-15
5144 Crawler Undercarriages	2
5146 Fuels, Lubricants and Coolants	3
5147 Bearings and Seals	3
5148 Belts and Chains	3
5149 Tire and Tracks	2
5157 Agricultural and Industrial Equipment Sales	2

5158 Diesel Engines IV	2	5167 Customer Relations	3
5159 Torque Converters	2	5168 Agricultural Safety	3
5162 Diesel Injection Nozzle Service	2	5169 Preventative Maintenance	2
5163 Internal Combustion Engines Lab	3	7711 Basic Machining Fundamentals	4
5165 Diesel Pump Calibration and Service	2	7741 Basic Metallurgy	4
5166 Suburban Garden Equipment II	3		

For course descriptions see page 138

Applied Fire Science

CAREERS

Every year fire destroys thousands of lives and property worth millions of dollars. Professional and volunteer firefighters and fire prevention technicians help protect the public from this danger.

Demand for personnel in this field is expected to increase steadily. As new fire departments are formed and others enlarge, employment should rise. Employment opportunities may be found with local fire departments, industrial plants, or fire underwriter's groups. All new personnel in this field must successfully pass certain written and physical examinations.

IVY TECH'S PROGRAM

The Applied Fire Science program emphasizes skills in the acquisition of technical and general training, and the development of mature judgement necessary in firefighting as well as administration. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: fire technology, fire apparatus, electricity, fire department hydraulics, chemistry, fire fighting, fire prevention and protection, hazardous materials, rescue practices and procedures, fire investigations, fire service inspection, communications, legal problems, and human relations. The courses are presented in various formats such as group or individual instruction and laboratory practice.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits
 Technical Certificate: a minimum of 45 credits
 Associate in Applied Science: a minimum of 92 credits

PROGRAM COMPOSITION	Credits
8112 Technical Communications	3
8203 Technical Mathematics I	4
0913 Techniques of Supervision I	3
5313 Introduction to Fire Technology	3
5314 Fire Apparatus I	3
8401 Human Relations	4
5322 Electricity	3
5323 Fire Apparatus II	3
5324 Fire Department Hydraulics I	3
8307 General Chemistry I	3
5325 Fire Department Hydraulics II	2
5393 Building Materials	3
5332 Fire Fighting Strategy and Tactics I	3
5333 Fire Alarm and Protection Equipment	3
5350 Applied Chemistry II	2
5334 Fire Fighting Strategy and Tactics II	2
8402 Applied Psychology	4
5342 Hazardous Materials I	3
5343 Rescue Practices and Procedures	3
5352 Hazardous Materials II	3
5353 Fire Investigations	4
5361 Fire Service Organization and Management	4
5362 Fire Department Specifications	4
8114 Technical Reporting	3
5363 Fire Prevention	4
5360 Fire Service Inspection	4
5364 Legal Problems in Fire Service	4
Total Credits:	92

ELECTIVES/REGIONAL OPTIONS

1212 Typewriting I	4
3219 Emergency Medical Technician—Ambulance (EMT-A)	5
5351 Industrial Safety and Fire Control	3
5391 Management Essentials	4

5394 Aircraft Fire Fighting	3
5395 Aircraft Fire Fighting II	3
5396 Shipboard Firefighting	3
5397 Radioactive Emergencies	3

For course descriptions see page 140

Architectural Drafting

CAREERS

Architectural drafting is a career in performing many of the planning tasks necessary to communicate the architect's designs to the builder. Typically the architect's communication involves the translation of ideas into graphic form.

As business and industry continue to grow, the demand for well trained technicians in architectural drafting increases. Entry level opportunities include the operation of an architect's office, use of building codes, materials of construction, contract documents, estimating, and field observation. In this career field, a student would probably be employed by architects, structural and mechanical-electrical systems engineers, contractors, sub-contractors, and building equipment and materials suppliers.

IVY TECH'S PROGRAM

The Architectural Drafting program provides instruction to develop the attitude, skills and knowledge necessary for a career in building construction drafting and detailing. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: drafting, residential construction materials, commercial construction materials, geometry, technical math, production drawing, light, medium and heavy construction drafting, mechanical and electrical equipment, and estimating. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVELS

- Occupational Certificate: a minimum of 15 credits
Technical Certificate: a minimum of 45 credits
Associate in Applied Science: a minimum of 104 credits

PROGRAM COMPOSITION

		Credits
7510 Basic Drafting		3
7511 Intermediate Drafting		3
5422 Residential Construction Materials Elective		3
8208 Geometry		3
8112 Technical Communications Elective		3
5423 Commercial Construction Materials		3
7522 Production Drawing		3
8209 Trigonometry		3
5430 Light Construction Presentation Drafting		3
5431 Light Construction Layout Drafting		3
5433 Light Construction Detail Drafting Elective		3
8302 Mechanics or		3
8303 Heat, Light & Sound		3
5440 Medium Construction Presentation Drafting		3
5441 Medium Construction Layout Drafting		3
5442 Medium Construction Detail Drafting Electives Economics Elective		3
7551 Statics		3
5450 Heavy Construction Presentation Drafting		3
5451 Heavy Construction Layout Drafting		3
5453 Heavy Construction Detail Drafting		3
7552 Strength of Materials		3
5432 Mechanical & Electrical Equipment		3
5460 Team Project Presentation Drafting		3
5461 Team Project Layout Drafting		3

5462 Team Project Detail Drafting	3	8406 Employment Orientation	2
8401 Human Relations	4	Any Industrial Drafting courses	
5452 Estimating	3	Any Construction Technology courses	
5470 Business Presentation Drawing	4	Any Interior Design Technology courses	
5471 Surveying Theory	3	5473 Architectural Rendering	3
5472 Surveying Field Problems	<u>2</u>	5474 Plat Mapping	3
Total Credits:	104	5475 Topographic Map Drafting	3
		5476 Architectural Business Principles	3
ELECTIVES/REGIONAL OPTIONS		5477 Model Building	3
8113 Oral Communications	3-4	5478 Specifications and Codes	3
8114 Technical Reporting	3	7520 Descriptive Geometry	3
8118 Effective Reading	2	8501 Field Study/Coop Ed	1-15
8204 Technical Math II	4		

For course descriptions see page 141

Industrial Drafting

CAREERS

With today's modern technology and complex mass production methods, the creation of a new product or improvement of an existing product is a highly involved science. The industrial drafting technician plays a major role in this process.

Industry is constantly searching for new technicians with the training and ideas to help bring products to market, or help improve the necessary manufacturing processes. In large industries, people with industrial drafting skills are needed in liaison work to correlate the efforts of the design engineer, customer representative and manufacturing plant. The positions can range from an entry level detailer on the drawing board to a designer with additional experience and training.

IVY TECH'S PROGRAM

The Industrial Drafting program provides instruction for initial employment or upgrading of skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate of Applied Science degree.

The program includes courses in the following areas: drafting, machine tool, industrial processes and systems, production drawing, product drafting, trigonometry, geometry, tool drafting, die drafting,

product design drafting, mechanisms and machines, gear and cam design drafting, metallurgy, and estimating. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVELS

- Occupational Certificate: a minimum of 15 credits
- Technical Certificate: a minimum of 45 credits
- Associate in Applied Science: a minimum of 107 credits

PROGRAM COMPOSITION	Credits
7510 Basic Drafting	3
7511 Intermediate Drafting	3
8203 Technical Math I	4
Machine Tool Elective	3
Elective	3
8208 Geometry	3
8112 Technical Communications	3
Elective	3
7521 Industrial Processes & Systems	3
7522 Production Drawing	3
8209 Trigonometry	3
7530 Product Drafting I	3
7532 Tool Drafting	3
7533 Die Drafting	3
Elective	3
8302 Mechanics or	3

8303	Heat, Light & Sound	3
7540	Product Design Drafting	3
7541	Advanced Tool & Gauge Design Drafting	3
7531	Mechanisms & Machines	3
	Elective	3
	Economics Elective	3
7551	Statics	3
7550	Gear & Cam Design Drafting	3
7553	Advanced Die Design Drafting	3
	Elective	
8114	Technical Reporting	3
7552	Strength of Materials	3
7560	Machine Design Drafting or	3
7555	Mold Design Drafting	3
7565	Metallurgy Fundamentals	2
	Elective	4
8401	Human Relations	4
7571	Industrial Planning & Estimating	3
7572	Industrial Design Project Drafting	6
	Elective	3

Total Credits: 107

ELECTIVES/REGIONAL OPTIONS		
Any Machine Tool courses		
Any Architectural Drafting courses		
8113	Oral Communications	3-4
8118	Effective Reading	2
8204	Technical Math II	4
8406	Employment Orientation	2
8501	Field Study/Coop Ed	1-15
7520	Descriptive Geometry	3
7543	Technical Illustration	3
7545	Product Drafting II	3
7547	Electronic Drafting	3
7556	Cutting Tool Design Drafting	3
7563	Advanced Jig and Fixture Design Drafting	3
7557	Jig and Fixture Design Drafting	3
7558	Sheet Metal Drafting Project	3
7564	Practicum in Metallurgy	1
0931	Time and Motion Study	3

For course descriptions see page 143.

Automotive Body Repair

CAREERS

Automobile body repair workers fix damaged vehicles by straightening bent frames, removing dents, welding torn metal, refinishing, and replacing parts. Most auto body workers specialize in automobiles, small trucks, large trucks, buses or truck trailers. Demand for auto body repairs is expected to increase as a result of the rising number of motor vehicles damaged in traffic. Most auto body repair workers are employed by shops specializing in body repairs and painting, and for automobile and truck dealers.

IVY TECH'S PROGRAM

The Automotive Body Repair program provides instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses in the following areas: body repair, welding, auto chassis and suspension, front end alignment, electricity, collision damage

repair, and auto paint shop practices. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 61 credits

PROGRAM COMPOSITION

		Credits
5601	Basic Body Repair I	2
5602	Basic Body Repair II	2
	Welding Elective	4
8112	Technical Communications	3
	Elective	3
5610	Practicum	1
5603	Basic Body Repair III	2
5604	Basic Body Repair IV	2
5812	Automotive Chassis and Suspension	2
5814	Automotive Front End Alignment	2
5823	Basic Electricity	3
	Elective	3

5610	Practicum	2	5610	Practicum	1
5611	Collision Damage Repair I	2			Total Credits: 61
5612	Collision Damage Repair II	2			
5620	Frame and Chassis I	2			
5621	Frame and Chassis II	2			
8201	Applied Math I Elective	4 2			
5610	Practicum	1	8114	Technical Reporting	3
5624	Auto Body Welding I	2	8301	Physical Science	3
5631	Upholstering	2	8501	Field Study/Coop Ed	1-10
5630	Collision Damage Appraising	2	5610	Practicum	1-15
5625	Auto Paint Shop Practices I	2	5622	Frame and Chassis III	2
8401	Human Relations Elective	4 2	5623	Frame and Chassis IV	2
			7741	Basic Metallurgy	2

ELECTIVES/REGIONAL OPTIONS

Any Automotive Service Technology courses	
Any Welding Technology courses	
Any Business Division courses	
8114 Technical Reporting	3
8301 Physical Science	3
8501 Field Study/Coop Ed	1-10
5610 Practicum	1-15
5622 Frame and Chassis III	2
5623 Frame and Chassis IV	2
7741 Basic Metallurgy	2

For course descriptions see page 145.

Automotive Service

CAREERS

The automotive service mechanic performs preventative maintenance, diagnoses breakdowns, and repairs on automobiles or other motor vehicles. As a result of society's great transportation needs and because today's cars are highly complex, automobiles need regular servicing.

Job opportunities for automotive service personnel are expected to be plentiful in the years ahead. Entry level positions may be found in automobile dealers, automobile repair shops, gasoline service stations, government, taxi cab and automobile leasing companies, or by self-employment.

IVY TECH'S PROGRAM

The Automotive Service program provides instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following general areas: chassis and suspension, front end alignment, braking systems, electricity, electronic ignition, fuel and carburetion, tune-up, starting and charging systems, engine theory and design, overhaul, transmissions, rear axle, air conditioning, and engine

tools and equipment. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 111 credits

PROGRAM COMPOSITION

		Credits
5812	Automotive Chassis and Suspension	2
5814	Automotive Front End Alignment	2
5813	Automotive Braking Systems	2
8301	Physical Science	3
	Math Elective	4
8112	Technical Communications	3
5815	Practicum	1
5823	Basic Electricity	3
5827	Conventional Ignition Systems	2
5828	Electronic Ignition Systems	2
5825	Fuel & Carburetion—Theory & Circuits	3
5826	Fuel & Carburetion—Overhaul	2
	Elective	3
5815	Practicum	1
5832	Starting & Charging Systems—Testing	2
5833	Starting & Charging Systems—Overhaul	2
5851	Automotive Accessories	2

5852	Engine Tune-up	2	Electives	8
8401	Human Relations	4	5815 Practicum	1
	Elective	2		
5815	Practicum	1		Total Credits: 111
5821	Engine Theory, Design & Construction	3		
5822	Engine Tools & Equipment	2		
5834	Engine Overhaul	2		
5845	Advanced Tune-up	2		
	Electives	6		
5815	Practicum	1		
	Math Elective	4		
5835	Manual Transmission Overhaul	2		
5843	Differentials and Rear Axle Overhaul	2		
5847	Air Conditioning—Theory, Service & Comp.	2		
5848	Air Conditioning—Diagnosis & Repair	2		
	Elective	2		
5815	Practicum	1		
5854	Automatic Transmissions—Theory & Operation	3		
5855	Automatic Transmissions—In-car Service	2		
5856	Automatic Transmissions—Bench Overhaul I	2		
5857	Automatic Transmissions—Bench Overhaul II	2		
	Electives	6		
5815	Practicum	1		
5862	Comprehensive Diagnosis & Procedures I	2		
5863	Comprehensive Diagnosis & Procedures II	2		
8501	Field Study/Coop Ed	3		

ELECTIVES/REGIONAL OPTIONS

Any Mathematics or Science courses	
Communications courses	
Machine Tool courses	
Welding courses	
Business Division courses	
Auto Body Repair courses	
Agricultural Equipment courses	
Diesel Power courses	
5815 Practicum	1-15
5846 Vehicle Inspection and Safety	2
5859 Motorcycle Maintenance	3
5861 Auto Blue Print Reading	4
5864 Automotive Parts Handling	3
5865 Service Organization and Management	3
5866 Occupational Safety & Service Health for Auto Service Environment	4
5867 Basic Shop Practices	2
5868 Small Engine Maintenance	3
5869 Recreational Vehicle Maintenance	3
8501 Field Study/Coop Ed	1-15

For course descriptions see page 145

Diesel Power

CAREERS

The diesel mechanic diagnoses and corrects mechanical faults in diesel powered vehicles and equipment. The use of diesel power on both stationary and mobile equipment has made great progress due to the economy of operation and comparatively low maintenance costs.

Employment of diesel mechanics is expected to increase rapidly over the upcoming years. Most diesel mechanics must gain actual experience as a trainee mechanic before specializing or advancing to a skilled mechanic position. Entry level positions may be found with diesel engine distributors, dealers or manufacturers, farm and construction equipment service firms, government, and independent repair shops.

IVY TECH'S PROGRAM

The Diesel Power Program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses in the following areas: initial employment or upgrading skills. The college and fuel systems, manual transmission overhaul, heavy duty brakes, auto brakes, and basic electricity. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 78 credits

PROGRAM COMPOSITION**Credits**

5813	Automotive Braking Systems	2
5823	Basic Electricity	3
8301	Physical Science	3
8112	Technical Communications	3
	Mathematics Elective	4
	Welding Elective	3
5821	Engines I	3
5832	Starting and Charging Systems—Testing	2
5833	Starting and Charging Systems—Overhaul	2
6231	Fluid Power Fundamentals	3
	Electives	3
6220	Diesel Engines I	3
6221	Diesel Electrical Systems I	2
6232	Diesel Pump and Fuel Systems I	3
5835	Manual Transmissions—Overhaul	2
	Electives	5
5843	Differentials in Rear Axle—Overhaul	2
6230	Diesel Engines II	3
	Machine Tool Elective	3
6240	Diesel Engine Diagnosis	3
6241	Heavy Duty Brakes Systems	2

Elective

6242	Heavy Duty Chassis and Suspension Systems	2
5847	Air Conditioning—Theory, Service and Components	2
5848	Air Conditioning—Diagnosis and Repair	2
5865	Service Organization and Management	4
8401	Human Relations	4
	Electives	3

Total Credits: 78

ELECTIVE/REGIONAL OPTIONS

Any Mathematics or Science course

Any Communications courses

Any courses from the following:

Machine Tool Technology

Welding Technology

Business Division

Auto Body Repair Technology

Agricultural Equipment Technology

8501	Field Study/Coop Ed	1-15
5846	Vehicle Inspection and Safety	3
5864	Automotive Parts Handling	3
6245	Basic Shop Practices	2
6246	Practicum	1-15

For course descriptions see page 148

Building Construction

CAREERS

Workers in the building construction occupations build, repair and modernize homes and other buildings, highways, airports, and other structures. Construction workers represent the largest group of skilled workers in the nation's labor force.

Demand for construction workers is expected to increase steadily over the next few years, but this will be largely affected by the nation's economy. Entry level positions may be found with contractors, concrete companies, lumber yards, architects, engineers, government, or manufacturing companies.

IVY TECH'S PROGRAM

The Building Construction program provides instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: wood, concrete and masonry construction, tools and woodworking equipment, house framing, use of steel square, millwork, stair building, sash and door

hanging, flooring and roof flashing, basic plumbing, heating and electrical wiring, blueprint reading, architectural drawing, surveying, and estimating. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 109 credits

PROGRAM COMPOSITION

Credits

6001	Carpentry Fundamentals	3
6002	Construction Tools and Skills	3
6003	Construction Materials	3
6004	Safety and First Aid	3
	Applied Math elective	4
6013	Blueprint Reading I	3
6014	Electric Wiring Fundamentals	3
6024	Plumbing Fundamentals	3
6011	Floor and Wall Layout and Construction	3
8112	Technical Communications	3
6012	Roof Construction	3
6023	Blueprint Reading II	3
	Science elective	3
6036	Masonry and Concrete Fundamentals	3
6015	Residential Wiring	3
6010	Practicum	1
7112	Heating Fundamentals	3
7123	Air Conditioning and Refrigeration Fundamentals	3
	and	
	Applied Mathematics elective (Carpentry)	4
6032	Carpentry—Exterior Trim	3
6021	Carpentry—Advanced Framing	3
	or	
	Applied Mathematics elective (Electrical)	4
6020	Electrical—Electrical Blueprint	3
	or	
6022	Plumbing—Design and Installation	3
6025	Plumbing—Plumbing Blueprint	3
	or	
6026	Masonry—Advanced Skills in Masonry	3
6027	Masonry—Masonry Estimating and Specs	3
	Elective for Masonry, Electrical and Plumbing Options	3
6010	Practicum	1
8401	Human Relations	4
	Architectural Drafting Elective	3
	Architectural Drafting Elective	3
	and	
6034	Carpentry—Millwork	3
6033	Carpentry—Interior Trim	3
	or	

6030	Electrical—Electrical Estimating	3
6031	Electrical—Commercial Wiring	3
	or	
6035	Plumbing—Plumbing Estimating	3
	Applied Mathematics elective (Plumbing)	4
	or	
6041	Masonry—Special Problems	3
6045	Masonry—Special Problems in Concrete	3
0122	Business Law I (Construction)	3
0110	Accounting Principles I	4
	and	
6056	Carpentry—Estimating and Specifications	3
6047	Carpentry—Cabinetry	3
	or	
6048	Electrical—Industrial Wiring	3
6049	Plumbing—Commercial Installation	3
6050	Masonry—Advanced Masonry and Design	3
6054	Electrical and Plumbing—Mechanical Instal. Elective	3
0323	Business Principles and Organization	3
6095	Construction Research Electives	6
8501	Field Study/Coop Ed	3

Total Credits: 109

ELECTIVES/REGIONAL OPTIONS

Mathematics Courses

8113	Oral Communications	3-4
8114	Technical Reporting	3
8118	Effective Reading	2
8302	Mechanics	3
8303	Heat, Light, Sound	3
8501	Field Study/Coop Ed	1-15
	Any Heating, Air Conditioning, Refrigeration courses (may also be substituted for Plumbing options)	
	Any Architectural Drafting courses	
	Any Industrial Management courses	
	Any Business Management courses	
6052	Cabinetry and Millwork	3
6053	Electrical Installation	3
6055	Mechanical Installation	3
6060	Advanced Residential Design	3
6061	Basic Theory of Painting and Stain	3
6062	Wall and Floor Coverings	3
6063	Introduction to Heavy Equipment	3
6064	Landscape Architecture and Design	3
6066	Interior Decorating	3
6067	Survey and Measurements	3
6093	Special Problems in Building Construction	3
6094	Advanced Projects in Building Construction	3
6010	Practicum	1-15
8001	Gas Welding, Brazing, Cutting	2
8002	Gas Fusion & Brazing Lab	3
8066	Introductory Welding	3

For course descriptions see page 148

Electronics Communications

CAREERS

Electronics communications is a field in which skilled technicians operate, maintain, research and construct communications equipment. The field includes television, radio, radar, sonar, computers, spacecraft guidance, and control instruments. Communications technicians work with engineers and scientists on complex technical work.

Employment opportunities in this field are expected to continue increasing. In most states, a state license examination must be passed before an individual can pursue a career in electronics. Once this requirement is met, entry level positions may be found in most industries' maintenance divisions, electronics service firms, utility companies, communication firms, or government. Advancement or self-employment is possible after gaining experience and further training.

IVY TECH'S PROGRAM

The Electronics Communications program provides instruction for the federal and state license examinations and initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead the student to an Occupational Certificate, Technical Certificate or Associate in Applied Science degree. This program also provides an option for those students who wish to specialize in radio and television servicing instead of general communication electronics.

The program includes courses in the following areas: AC-DC fundamentals, testing equipment, troubleshooting, active devices, electronic circuits, semi-conductors, integrated circuits, AM-FM radio, monochrome and color television, television troubleshooting, and digital principles and applications. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study practice.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 105-123 credits

PROGRAM COMPOSITION	Credits
6412 DC Fundamentals I	3
6414 DC Fundamentals II	3
8203 Technical Mathematics I	4
6525 Introduction to Test Equipment	3
Elective	2-4
6423 AC Fundamentals I	3
6425 AC Fundamentals II	3
8209 Trigonometry	3
8112 Technical Communications	3
6424 Troubleshooting Techniques	3
6434 Introduction to Active Devices	3
6435 Electronic Circuits I	3
8204 Technical Mathematics II	4
Elective	2-4
Elective	3-4
6446 Integrated Circuits	3
6447 Special Semi-Conductors	3
Elective	1-4
6436 AM Radio	3
6438 FM Radio	3
Elective	2-4
6454 Electronics Circuits II	3
6455 Circuit Analysis	3
6445 Monochrome Television	3
6448 Color Television	3
6450 Television Troubleshooting	3
6562 Digital Principles I	3
6563 Digital Principles II	3
6451 Communications Electronics I	3
6456 Advanced Troubleshooting	3
Elective	2-4
Elective	1-4
6577 Digital Principles III	3
6578 Digital Applications	3
8401 Human Relations	4
Elective	2-4
Elective	3-4
Total Credits:	105-123

ELECTIVES/REGIONAL OPTIONS

8113 Oral Communications	3
8114 Technical Reporting	3
8205 Technical Mathematics III	2
8206 Technical Calculus I	4
8207 Technical Calculus II	4

8302 Mechanics	3	6441 FCC 3rd and 2nd Class License	4
8303 Heat, Light, Sound	3	6442 FCC 1st Class License	4
8501 Field Study/Coop Ed	1-15	6443 Indiana State R and TV License	4
Any Business Division courses		6452 Communications Electronics II	3
Any Industrial Electronics courses		6453 Communications Electronics III	3
6413 Fabrication	3	6457 Electro-Mechanical Controls	3
6420 Introduction to Data Processing and Computers	3	6458 Magnetic Recording	3
6426 Electronics Drafting	3	6459 Business Practices	2
6440 CET Preparation	2	For course descriptions see page 151	

Electronics

CAREERS

The electronics technician assists the engineer and, in most cases, holds a position between the engineer and skilled craftsman. This technician is skilled in troubleshooting electronic equipment, performing operations and calculations, testing and reporting.

Job opportunities for people who are well-trained in this field are expected to increase as our society continues to industrialize. Entry level positions such as engineering aide, repair technician, inspector, assembler, sales representatives, and many others may be found with electronics manufacturers, distributors, retailers, electronics service firms, government, or other electronics related firms.

IVY TECH'S PROGRAM

The Electronics Technology program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate, or Associate in Applied Science degree.

The program includes courses in the following areas: AC-DC fundamentals, test equipment, troubleshooting, active devices, electronics circuits, integrated circuits, rotating machines, circuit analysis, industrial electronics, industrial controls, digital principles and applications, and electro-mechanical controls. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

PROGRAM LEVELS

- Occupational Certificate: a minimum of 15 credits
- Technical Certificate: a minimum of 45 credits
- Associate in Applied Science: a minimum of 105 credits

PROGRAM COMPOSITION

		Credits
6412 DC Fundamentals I		3
6414 DC Fundamentals II		3
6525 Introduction to Test Equipment		3
8203 Technical Mathematics I		4
Elective		2-4
6423 AC Fundamentals I		3
6425 AC Fundamentals II		3
6424 Troubleshooting Techniques		3
8209 Trigonometry		3
8112 Technical Communications		3
6434 Introduction to Active Devices		3
6435 Electronics Circuits I		3
8204 Technical Mathematics II		4
Elective		2-4
Elective		3-4
6446 Integrated Circuits		3
6447 Special Semi-Conductors		3
6538 Rotating Machines I		3
6539 Rotating Machines II		3
Elective		1-4
Elective		2-4
6454 Electronics Circuits II		3
6455 Circuit Analysis		3
6543 Basic Industrial Electronics		3
6544 Introduction to Industrial Controls		3
Elective		3-4
6562 Digital Principles I		3

6563	Digital Principles II	3	8205	Technical Mathematics III	2
6553	Industrial Electronics I	3	8206	Technical Calculus I	4
6554	Industrial Electronics II	3	8207	Technical Calculus II	4
	Elective	1-4	8501	Field Study/Coop Ed	1-15
	Elective	2-4		Any Electronics Communication courses	
8401	Human Relations	4		Any Business Division courses	
6577	Digital Principles III	3	6520	Microprocessors	3
6578	Digital Applications	3	6530	Test Equipment Maintenance	3
6574	Advanced Electro-Mechanical Controls	3	6531	Independent Study	1-3
	Elective	2-4	6540	Medical Electronics I	3
			6541	Medical Electronics II	3
			6542	Medical Electronics III	3
			6546	Electrical Maintenance	3
			6550	Electro-Mechanical Controls	3
			6551	DC Fundamentals III	3
			6552	AC Fundamentals III	3
	Total Credits:	105-123		For course descriptions see page 152	

ELECTIVES/REGIONAL OPTIONS

8113	Oral Communications	3-4
8114	Technical Reporting	3
8302	Mechanics	3
8303	Heat, Light, Sound	3

Cable Television

CAREERS

Cable television (CATV) has emerged as a powerful new force in mass communications. By using cables instead of airwaves, CATV can offer new or experienced technicians a future unlike that of the more conventional radio and television industries.

Demand for technicians in CATV is expected to increase steadily. Most of the new jobs will be in smaller cities where most CATV systems are located to improve television reception in rural areas. Entry level positions may be found with cable television and service related companies. Experience with CATV is very important before most advancement possibilities.

IVY TECH'S PROGRAM

The Cable Television program provides instruction for initial employment or skill upgrading. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses in the following areas: cable television, electricity, rules and regulations of

CATV, system design, cable construction, residential construction, trouble shooting, safety, preventative maintenance, and professional cable practices. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 74 credits

PROGRAM COMPOSITION

		Credits
6610	Introduction to Electricity	3
6614	AC-DC Circuit	3
6611	Fundamentals of Cable Television	3
6615	Rules and Regulations of CATV	2
8301	Physical Science	3
8203	Technical Math I	4
6620	System Design	3
6623	Cable Construction Techniques	3
6622	Cable Methods & Splicing	3
6631	Solid State Fundamentals	3
6634	Electronic Circuits	3

8401 Human Relations	4	6640 CATV Trouble Shooting Techniques	3
6621 Basic Residential Construction	3	6642 Preventative Maintenance Practices	4
8112 Technical Communications	3	6641 Headend Operations	3
6630 Mechanics of System Design	3	6643 Professional Cable Practices	3
6632 Trouble Shooting Fundamentals I	3	8501 Field Study/Coop Ed.	3
6635 Trouble Shooting Fundamentals II	3		
6633 Safety Techniques	3		
6613 Introduction to Public Relations	3		
		Total Credits:	74
		For course descriptions see page 154	

Heating, Air Conditioning and Refrigeration

CAREERS

Heating, air conditioning and refrigeration mechanics work on the equipment which cools and heats homes, offices, schools, and other buildings. They also work on refrigeration equipment.

Employment opportunities for heating, air conditioning and refrigeration mechanics are expected to increase rapidly over the next few years. Skilled workers in this field can be in positions such as heating, air conditioning and refrigeration mechanic, furnace installer, oil burner mechanic, gas burner mechanic, or sales representative. Entry level positions may be found in office buildings, factories, restaurants, theaters, hospitals, government agencies or by self-employment.

IVY TECH'S PROGRAM

The Heating, Air Conditioning and Refrigeration program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science degree.

The program includes courses in the following areas:

heating, air conditioning, refrigeration, electricity, mechanics, gas and oil heating service, electrical cooling service, electric and hydronic heating service, mechanical cooling service, heat pump service, electric motors and controls, dust fabrication and installation, blueprint reading, commercial refrigeration, psychometrics, air distribution, movement and ventilation design, control systems, and equipment sales. The courses are presented in various formats such as group or individual instruction and laboratory practice.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 113 credits

PROGRAM COMPOSITION

	Credits
7112 Heating Fundamentals	3
7123 Air Conditioning and Refrigeration Fund.	3
7113 Basic Electricity for Air Conditioning	3
7114 Basic Mechanics and Shop Techniques	2
Mathematics elective	4
7126 Air Conditioning and Refrigeration	3
7124 Heating Service—Gas and Oil	3

7133	Cooling Service—Electrical	3	7175	Equipment Sales	3
7135	Electrical Circuits and Controls	3	7176	Applied Design	4
	Mathematics Elective	4	8401	Human Relations	4
7127	Heating Service—Electric and Hydronic	2		Elective	2
7134	Cooling Service—Mechanical	2		Elective	1
7125	Motors and Motor Control	3			
7154	Duct Fabrication and Installation	3		Total Credits:	113
8112	Technical Communications	3			
	Mathematics Elective	3			
	Elective	3			
7143	Blueprint Reading	3	8113	Oral Communications	3-4
7144	Commercial Refrigeration	3	8114	Technical Reporting	3
7145	Heat Pump Service	2	8118	Effective Reading	2
7146	Cooling Service—Advanced	2		Any Science Courses	
	Science Elective	3		Any Business Division Courses	
	Elective	3	8208	Geometry	3
	Elective	1	8209	Trigonometry	3
7153	Commercial Refrigeration—Advanced	3	8501	Field Study/Coop Ed	1-15
7136	Psychrometrics	3	5847	Automotive Air Conditioning I	2
7163	Air Distribution System Design	3	5848	Automotive Air Conditioning II	2
7137	Heat Loss and Gain Calculations	3	8066	Introduction Welding	3
	Elective	3	7147	Uniform Mechanical Code	4
7162	Specialized Environmental Systems	3	7156	Energy Management and Balancing	3
7155	Specifications and Estimating	3	7157	Solar Heating and Cooling	2
7165	Advanced Electrical Control	3	7158	Absorption Air Conditioning Systems	2
	Electives	6	7159	Practicum	1-15
	Elective	1	7510	Basic Drafting	3
7174	Service Organization and Management	3			

ELECTIVE/REGIONAL OPTIONS

8113	Oral Communications	3-4
8114	Technical Reporting	3
8118	Effective Reading	2
	Any Science Courses	
	Any Business Division Courses	
8208	Geometry	3
8209	Trigonometry	3
8501	Field Study/Coop Ed	1-15
5847	Automotive Air Conditioning I	2
5848	Automotive Air Conditioning II	2
8066	Introduction Welding	3
7147	Uniform Mechanical Code	4
7156	Energy Management and Balancing	3
7157	Solar Heating and Cooling	2
7158	Absorption Air Conditioning Systems	2
7159	Practicum	
7510	Basic Drafting	3

For course descriptions see page 155

Industrial Maintenance

CAREERS

Industrial maintenance mechanics spend much of their time performing preventative maintenance. By regularly inspecting equipment, performing general maintenance and maintaining accurate maintenance records, they prevent machine trouble which could cause later breakdowns.

Job opportunities for well-trained industrial maintenance personnel are expected to rise steadily during the next few years as manufacturing and production increases and the machinery utilized becomes more complex. Most entry level jobs are found in manufacturing industries such as food products, primary

metals, machinery, chemicals fabricated metal products, transportation equipment, paper publishing and rubber.

IVY TECH'S PROGRAM

The Industrial Maintenance program provides instruction to perform installation and general maintenance in three major areas; machine tools; heating and air conditioning; electrical wiring and equipment. The college offers a variety of courses and it is possible only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate,

Technical Certificate, or Associate in Applied Science degree.

This program provides the student with an opportunity to specialize in either industrial equipment maintenance or industrial facilities maintenance. The program includes courses in the following areas: supervision, blueprint reading, drafting, industrial safety, machine tool, welding, AC-DC fundamentals, troubleshooting electrical maintenance, rotating machines, machine diagnosis and repair, hydraulic and pneumatic principles, preventative maintenance, carpentry, plumbing, construction, masonry and concrete and heating and cooling service. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 105 credits

PROGRAM COMPOSITION	Credits
Mathematics Electives	8
8112 Technical Communications	3
8401 Human Relations	4
Electives selected from college core and related courses	12
<u>Six Credits elected from:</u>	
0323 Business Principles and Organization	3
0941 Labor Relations	3
0952 Work Analysis and Improvement	3
0913 Techniques of Supervision I	3
Economics Elective	3
<u>Six Credits elected from:</u>	
6013 Blueprint Reading I	3
7731 Basic Print Reading	3
7510 Basic Drafting	3
7734 Advanced Print Reading	3
6023 Blueprint Reading II	3
<u>Sixty-Six Credits from:</u>	
(for specialization in industrial equipment maintenance)	
0932 Principles of Industrial Safety	3
7710 Basic Machine Tool Introduction	3
7711 Basic Machining Fundamentals	3

7712 Machining Fundamentals	3
7720 Machine Tool Processing	3
7721 Machine Tool Setup and Operation	3
6412 DC Fundamentals I	3
6423 AC Fundamentals I	3
6525 Introduction to Test Equipment	3
6524 Troubleshooting Techniques	3
6546 Electrical Maintenance	3
6538 Rotating Machines I	3
6447 Special Semi-Conductors	3
6539 Rotating Machines II	3
7331 Industrial Machinery Electrical Circuits	3
7340 Machine Diagnosis and Repair: Mechanical	3
7339 Machine Diagnosis and Repair: Electrical	3
7341 Basic Hydraulic and Pneumatic Principles	3
7342 Hydraulic and Pneumatic Systems and Repair	3
7343 Preventive Maintenance	3
7344 Power Plant Mechanics I	3
7345 Power Plant Mechanics II	3
6014 Electrical Wiring Fundamentals	3
6031 Electrical Commercial Wiring	3
6001 Carpentry Fundamentals	3
6002 Construction Tools and Skills	3
6003 Construction Materials	3
6014 Electric Wiring Fundamentals	3
6024 Plumbing Fundamentals	3
6036 Masonry and Concrete Fundamental's Any electives from Building Construction	3
7124 Heating Service—Gas and Oil	3
7127 Heating Service—Electric and Hydronics	3
7133 Cooling Service—Electrical	3
7134 Cooling Service—Mechanical	3
7154 Duct Fabrication and Installation	3
7144 Commercial Refrigeration I	3
7153 Commercial Refrigeration—Advanced Any electives from Heating, Air Cond. and Refrigeration	3

Total Credits: 105

ELECTIVES/REGIONAL OPTIONS

Any Mathematics and Science courses

Any Communications Skills courses

Any Business Division courses

Any Trade and Technical Division courses

8501 Field Study/Coop Ed

1-15

7330 Practicum

1-15

For course descriptions see page 157

Surface Mining Operations

CAREERS

Advancing technology and changing mining conditions have created a need for additional qualified personnel in the surface mining industry. With the present rate of mine expansion, a critical shortage of mine personnel is possible over the next few years.

IVY TECH'S PROGRAM

The Surface Mining program supplies the surface coal industry with qualified personnel in the area of coal operation and management. The program is six quarters in length, but will be spread over a 2½ year period of time. Students receive on-the-job training four quarters and are in the classroom for six. After successfully completing the work experience and six quarters of study, students are awarded an Associate in Applied Science degree.

After the first two quarters, students in this program will be interviewed by several mine supervisors for one of several cooperating work stations in the mining industry. The students will be paid by the mining industry and will become an employee of that company after successfully completing the program and work experience.

The program includes courses in the following areas: mining law, blasting and explosives, mine machinery operations, reclamation mine planning, economics of mining. These courses are to be covered along with two 24-week training sessions in an operational coal mine. The result of this program can lead to a first level management position in a coal mine.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 128 credits

PROGRAM COMPOSITION		Credits
7610	Introduction to Coal Mining	5
7611	General Physical Geology	5
7612	Surface Mining Machinery	4
8112	Technical Communications	3
7620	Mining Regulations	5
8203	Technical Mathematics I	4
7622	Mine Maps and Surveying	4
7623	Elements of Reclamation	4
7630	Surface Mine Hydraulics	4
7631	Elements of Soil Management	4
7632	Surface Mine Equipment Operation	4
7633	Principles of Welding	4
7640	Blasting and Explosives	5
7641	Techniques of Operation Safety and A.P.	4
7642	Electrical Circuits and Systems	4
7643	Economics of Mining and Cost Calculations	4
7650	Coal Prep. Plants	2
7651	Coal Sampling and Analysis	3
7652	Labor Relations	3
7653	Transmission Systems, Etc.	4
7654	Mine Operational Planning	4
7660	First Aid Management	4
8401	Human Relations	4
7662	Coal Mine Supervisions	5
7663	Water Drainage and Water Pollution Laws	5
7625	Surface Mining Field Study I	6
7626	Surface Mining Field Study II	6
7645	Surface Mining Field Study III	6
7646	Surface Mining Field Study IV	6
8209	Trigonometry	3
ON THE JOB TRAINING CLASSES:		
7625	Surface Mining Field Study I	6
7626	Surface Mining Field Study II	6
7645	Surface Mining Field Study III	6
7646	Surface Mining Field Study IV	6
Total Credits:		128

For course descriptions see page 158

Machine Tool

CAREERS

Machine tool technicians work in production departments, maintenance departments, tool rooms and job shops. They spend a great deal of their time operating machine tool equipment at peak efficiency.

Job opportunities may be found in factories that produce fabricated metal products, transportation equipment, and machinery in large quantities. Demand for these skilled workers is expected to increase as rapidly as metal-working and plastics industries expand, and most of the openings will be in the larger manufacturing/industrial centers.

IVY TECH'S PROGRAM

The Machine Tool program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science degree.

The program includes courses in the following areas: machine tool, blueprint reading, machining, specialized machining, set-up and operation, machine tool processing, and technical communications. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 106 credits

PROGRAM COMPOSITION

Credits

7710 Basic Machine Tool Introduction	3
7731 Basic Print Reading	3
7711 Basic Machining Fundamentals	3
Math Elective	3-4
8301/8302 Physical Science or Mechanics	3
Drafting Elective	3
7712 Machining Fundamentals	3
7720 Machine Tool Processing	3
7721 Machine Tool Setup & Operation	3
Math Elective	3-4
7730 Advanced Machine Tool Processing	3
7733 Advanced Machine Tool Setup & Operation	3
Machining Elective	3
Math Elective	3-4

7734 Advanced Print Reading	3
7740 Specialized Machining Theory	3
7742 Specialized Machine Tool Application I	3
7743 Specialized Machine Tool Application II	3
8112 Technical Communications	3
Machine Tool Electives	6
Elective Options—Machining or Tool Design	9
Elective	3
Machine Tool Elective	3
8401 Human Relations	4
Electives	8
8501 Electives and/or Coop Ed.	15
Total Credits:	106

ELECTIVES/REGIONAL OPTIONS

Any Communications courses	
Any Math or Science courses	
Any Industrial Management courses	
Any Drafting courses	
Any Welding courses	
8501 Field Study/Coop Ed	1-15
7331 Electrical Circuits	3
7341 Hydraulics & Pneumatics Fundamentals	3
7741 Basic Heat Treat & Metallurgy	3
7750 Tool Fabrication I	3
7751 Tool Fabrication II	3
7760 Numerical Control & Automatic Proc.	3
7761 Plastics Molding Fundamentals	3
7762 Precision Measurement	3
7763 Grinding Technology	3
7764 Layout & Inspection	3
7770 Practicum	1-15
9412 Shop Mathematics I	3
9415 Mathematics & Blue Print Reading I	4
9416 Basic Diemaking I	4
9417 Advanced Diemaking I	4
9419 Basic Molding	4
9421 Shop Mathematics II	3
9424 Mathematics and Blue Print Reading II	4
9425 Basic Diemaking II	4
9426 Advanced Diemaking II	4
9431 Shop Mathematics III	3
9433 Mathematics & Blue Print Reading III	4
9441 Shop Mathematics IV	3
9450 Shop Mathematics V	3
9460 Shop Mathematics VI	3

For course descriptions see page 159

Pollution Treatment

CAREERS

The impact of technological developments in the field of air, water and wastewater treatment combined with the magnitude of the waste disposal problem has helped create the need for competent support personnel at the technician level. Pollution treatment technicians assist researchers, public health scientists and water plant operators.

Job opportunities in this field are expected to increase over the next few years. Treatment plants have grown more complex, and require additional and highly trained operating staffs. Water and wastewater technicians can function in areas such as research or pilot plant development and operation, operator or assistant operator of water purification facilities, assistant in designing operational facilities, or as a member of the public health team.

IVY TECH'S PROGRAM

The Pollution Treatment program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's educational objective. If not, different combinations of these courses will lead to an Occupational Certificate, Technical Certificate or Associate in Applied Science degree.

The program includes courses in the following areas: environmental control, chemistry, physical science, communications, research, hydraulics, microbiology, water supply and treatment, equipment and maintenance, reporting and purchasing, community sanitation, air pollution, environmental administration, and plant operations. The courses are presented in various formats such as group or individual instruction and laboratory practice. The program may also provide for a field study project.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 45 credits

Associate in Applied Science: a minimum of 105 credits

PROGRAM COMPOSITION		Credits
7913	Introduction to Environmental Control	4
8203	Technical Mathematics I	4
8110	Communications	4
8307	General Chemistry	3
8301	Physical Science	3
8204	Technical Mathematics II	4
7915	Applied Chemistry I	3
8113	Oral Communications	3-4
7946	Applied Research I	2
7934	Basic Hydraulics	4
7926	Applied Chemistry II	3
8308	General Microbiology	3
7916	Environmental Seminar Electives	1
7943	Water Supply and Treatment	4
7942	Applied Microbiology	3
7945	Equipment and Maintenance I	3
7951	Reporting and Purchasing	2
7957	Community Sanitation	3
7954	Plant Operations I—Municipal	4
7955	Management and Supervision Procedures	3
7958	Equipment and Maintenance II	3
7960	Air Pollution Control I Elective	2
7961	Plant Operations II—Municipal	3
7970	Air Pollution Control II	3
7972	Environmental Administration	4
7956	Applied Research II Elective	2
7963	Plant Operations III—Industrial	3
8501	Field Study Coop Ed	12
Total Credits:		105

ELECTIVES/REGIONAL OPTIONS

8118	Effective Reading	2
8210	Statistics	3
8401	Human Relations	4
7964	Plant Mathematics	4
7966	Hazardous Materials	2
7967	Occupational Orientation	2
7973	NPDES Workshop	2
7974	Phosphorus Removal Workshop	2
7975	Basic Laboratory Skills	2
7976	Metal Analysis Workshop	2

For course descriptions see page 160

Welding

CAREERS

Welding is the most common method of permanently connecting metal parts by melting them together. The principal duty of the welder is to control the melting by directing heat from either an electric arc or gas welding torch and to add filler metal as needed.

Job opportunities should be very good for welders in the future. Recent reports indicate that opportunities should be especially good for welders in nuclear power plants, pipelines, and ship construction. Other opportunities may exist in the fabrication and building trades, welding services shops, utility companies, metal manufacturing firms, electric motor manufacturers, and almost all manufacturers who use metal in their products.

IVY TECH'S PROGRAM

The Welding Program provides instruction for initial employment or upgrading skills. The college offers a variety of courses and it is possible that only one course will meet a student's education objective. If not, different combinations of these courses will lead to an Occupational Certificate or Technical Certificate.

The program includes courses in the following areas: gas and arc welding, blueprint interpretation, electrical fundamentals, MIG, TIG, metallurgy, and gas fusion and brazing. The courses are presented in various formats such as group or individual instruction and laboratory practice.

PROGRAM LEVELS

Occupational Certificate: a minimum of 15 credits

Technical Certificate: a minimum of 63 credits

PROGRAM COMPOSITION

Credits

8001	Gas Welding, Brazing and Cutting (Class)	2
8002	Gas Fusion and Brazing Shop	3
8201	Applied Mathematics I	4
8112	Technical Communications	3
8006	Basic Metallurgy	3
8010	Arc Welding I (Class)	2
8011	Arc Welding I Shop	3
8202	Applied Mathematics II	4
8013	Blue Print Interpretation I	3
8401	Human Relations	4
8020	Arc Welding II (Class)	2
8021	Arc Welding II Shop	3
8022	Electrical Fundamentals	3

8024	Blue Print II	3
8030	MIG (Class)	1
8031	TIG (Class)	1
8032	MIG Shop	2
8033	TIG Shop	2
8406	Employment Orientation	2
	Electives	13
	Total Credits:	63

ELECTIVES/REGIONAL OPTIONS

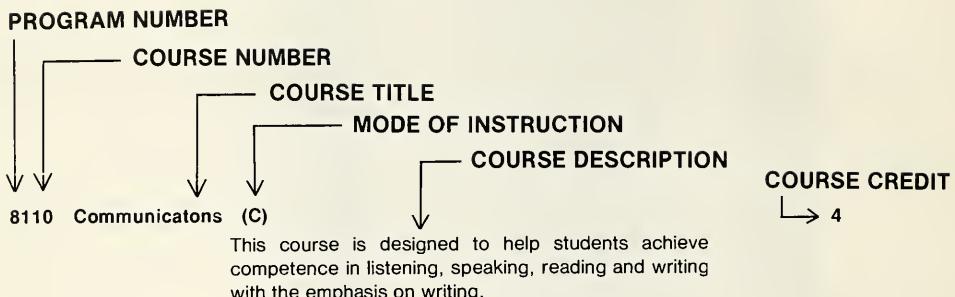
8203	Technical Mathematics	4
8301	Physical Science	4
8040	Welding Equipment Maintenance (Oxy & Arc Class)	2
8041	Welding Equipment Maintenance Shop	1
8042	Basic Fabrication I (Class)	1
8043	Basic Fabrication I Shop	2
8044	Welding Equipment Maintenance: Inert Gas (Class)	2
8045	Welding Equipment Maintenance: Inert Gas Shop	1
8046	Basic Mine Welding (Class)	1
8047	Basic Mine Welding Shop	2
8048	OSHA Welding Safety	4
8049	Prod. and Resistance Welding (Class)	1
8050	Prod. and Resistance Welding Shop	2
8051	Welding Certification (Class)	2
8052	Welding Certification Shop	2
8053	Basic Pipe Welding (Class)	2
8054	Basic Pipe Welding Shop	2
8055	Special Welding Processes	1-3
8056	Plasma Arc Lecture	1
8057	Plasma Arc Shop	1
8058	Industrial Materials	3
8059	Welding Troubleshooting Inspection (Class)	1
8060	Welding Troubleshooting Inspection Shop	1
8061	Shop Practices	1-6
8062	Advanced Shop Practices	1-3
8063	Welding Practice for Auto Service	3
8064	Welding Practice for Auto Body	5
8065	Welding Practice for Agricultural Equipment	3
8066	Introductory Welding (non-majors)	3

For course descriptions see page 162

Course Descriptions

**Business Sciences
Graphics and Media
Health Occupations
Trade and Technical**

Legend



Modes of Instruction

Delivery Mode	Definition
Classroom (C):	Lecture, discussion or other organized academic activities which require about one to two hours of outside preparation for each hour of class (or comparable effort in individualized modes).
Laboratory (L):	Organized and pre-planned learning experience, under close supervision, typically in a laboratory, with frequent evaluation based on structure projects, worksheets, experiments, problem solving, case studies, model building, diagnosis, etc., and reinforced by related classroom type technical college level instruction.

Related Courses

Communications

8110 Communications (C) 4

Aids students in achieving competence in listening, speaking, reading and writing, with emphasis on writing.

8111 Business Communications (C) 4

Prerequisite: Communications

Improves student's ability to handle communication situations in business and industry, with emphasis on oral and written communication problems. Student learns to write various types of business correspondence, as well as the psychology behind them.

8112 Technical Communications (C) 3

Aids students in achieving competence in listening, speaking, reading and writing, with emphasis on writing.

8113 Oral Communications (C) 4

Focuses on basic elements of the oral communication process, with applications to actual work situations including informative briefings, persuasive presentations, interviews, small conferences and other job-related problems. (May be used either as required or elective course.)

8114 Technical Reporting (C) 3

Prerequisites: 8110 or 8112

Provides understanding of fundamental principles of written and oral reporting, with various kinds of reports discussed and written, and business letters and memoranda related to reporting studied and practiced. (May be used either as required or elective course.)

8115 Critical Reading (C) 2

Practices comprehension and critical interpretation of college level materials: an advanced study of implied and inferred meanings.

8116 Speed Reading (C) 2

Provides opportunity to achieve higher reading speed while maintaining or improving comprehension. Students learn to match reading speed with type of material and reading objective.

8117 Effective Listening (C)

2

Focuses on process of listening. Discusses barriers to effective listening and practices solutions for overcoming them.

8118 Effective Reading (C)

2

Affords participants opportunity to achieve higher level of reading speed while maintaining or improving current rate of comprehension and retention. Presents techniques for analyzing present reading ability to achieve greater efficiency and effectiveness.

8119 Copywriting (C)

4

Prerequisites: 8110 or 8112

Studies applications of effective copywriting to magazine and newspaper advertising, including headlines, body copy, direct response, outdoor and print; introduces scripting for television and radio commercials and studies aspects of language relating to behavioral sciences.

X 8120 College Study Principles (C) 2

2

Teaches practical applications in dealing with college level lecture and laboratory work, including study routine and habits.

Communications/Skills Advancement

8151 Developmental Writing (Pre-Tech) 3-4

Studies development of basic writing skills with emphasis on sentence development. (May be taken concurrently with Developmental Reading II or III, but not with Developmental Reading I.)

8152 Developmental Reading I (Pre-Tech) 2-4

Develops decoding skills, vocabulary and comprehension; aids student in developing basic reading skills to junior high school level.

8153 Developmental Reading II (Pre-Tech) 2-4

Develops vocabulary, rate and comprehension to high school level. (Intended as follow-up for students completing Developmental Reading I.)

8154 Developmental Reading III (Pre-Tech) 2-4

Develops vocabulary, rate and comprehension to college level. (Intended as follow-up for students completing Developmental Reading II.)

8155 Intra-Personal Skills Development (Pre-Tech) 4

Provides strategies for helping students perceive

themselves as adequate and valuable persons. Seeks to produce progress in student's perceived self-image, with emphasis placed on student's strengths; encourages each student toward increased self-direction.

8156 Study Skills Development (Pre-Tech) 2

Develops basic skills needed for classroom work: note-taking from lectures, textbook reading and outlining, test-taking, etc.

8252 Arithmetic II (Pre-Tech) 1

Studies arithmetic operations in fractions.

8253 Arithmetic III (Pre-Tech) 1

Studies arithmetic operations in decimals.

8254 Intermediate Arithmetic I (Pre-Tech) 1

Studies per cents and their use.

8255 Intermediate Arithmetic II (Pre-Tech) 1

Studies ratios and proportions.

8256 Intermediate Arithmetic III (Pre-Tech) 1

Studies measurement, including English and metric.

8257 Elementary Algebra (Pre-Tech) 2

Introduces algebraic concepts, including signed numbers, expressions and terms, simple equations and formulas.

8258 Elementary Geometry (Pre-Tech) 2

Introduces plane and solid geometry concepts.

8259 Elementary Trigonometry (Pre-Tech) 2

Introduces plane trigonometry concepts, with emphasis on right triangle trigonometry.

8260 Occupational Mathematics I (Pre-Tech) 2

Introduces mathematics as applied in occupational area in which student is enrolled.

8261 Occupational Mathematics II (Pre-Tech) 2

Introduces mathematics as applied in occupational area in which student is enrolled.

8262 Occupational Mathematics III (Pre-Tech) 2

Applies mathematics directly to specific examples typical of activities practiced on the job. (Continues Occupational Mathematics II.)

8207 Technical Calculus II (C) 4

Prerequisite: 8203

Continues study of methods and applications of differential and integral calculus; introduces differential equations.

8208 Geometry (C) 3

Prerequisite: 8203

Studies geometric topics as they relate to modern technology, including basic laws of geometry, polygons, solid geometry, properties of circles, constructions and right triangles.

Mathematics

8201 Applied Mathematics (C) 4

Reviews basic mathematics required for technically related fields; emphasis is on measurement, ratio, proportion, per cent and formula evaluation.

8202 Applied Mathematics II (C) 4

Continues study of basic mathematics, including equations, squares, square roots, distances, areas, volumes and right triangles.

8203 Technical Mathematics I (C) 4

Introduces algebra through linear equations in one unknown, graphing; additional topics of powers of ten, scientific notation and the metric system.

8204 Technical Mathematics II (C) 4

Continues Technical Mathematics I, covering systems of equations, factoring, fractional equations, quadratic equations and logarithms.

8205 Technical Mathematics III (C) 2

Continues study of equations using determinants and matrices, and introducing computer number bases and Boolean algebra. (Primarily for Electronics Technology)

8206 Technical Calculus I (C) 4

Introduces the basics of analytic geometry and differential and integral calculus.

Mathematics/Skills Advancement

8251 Arithmetic I (Pre-Tech) 1

Studies arithmetic operations in whole numbers.

8209 Trigonometry (C)**3**

Prerequisite: 8203

Studies trigonometric functions, the use of trigonometric tables and scientific calculators, solutions of problems involving right triangle and oblique triangle trigonometry and graphing of trigonometric functions.

X 8210 Statistics (C)**3**

Prerequisite: 8203

Studies collection interpretation and presentation of data, including measures of central tendency, binomial and normal distributions, hypothesis testing and probability.

X 8211 Computer Mathematics (C)**2**

Studies mathematics relevant to solution and simplification of computer programs, including number bases, logic and flowcharts.

X 8212 Business Mathematics (C)**3**

Studies basic business practices of banking and retail sales, including reconciliation statements, invoicing, simple interest, payroll and inventory; introduces metrics and number base.

8213 Mathematics of Finance (C)**3**

Prerequisite: 8212

Continues study of topics of interest to the business manager: markup, commission, taxes, compound interest; introduces statistics, depreciation and analysis of financial statements.

X 8214 Metric System (C)**1**

Introduces use of metrics with emphasis on everyday applications.

8215 Electronic Calculator Mathematics (C)**1**

Trains student in the use of a four function calculator and scientific calculator.

8216 Commercial Art Mathematics (C)**2**

Includes measurement, scaling and mathematics of type specification and space requirements in newspaper, magazine and TV advertising; includes arithmetic review on extra, individualized basis for those demonstrating need (by examination on student request).

8217 Managerial Mathematics (C)**3**

Reviews special mathematical concepts and techniques involved in managerial decision making.

8218 Mathematics of Finance II (C)**4**

Prerequisite: 8213

Continues Mathematics and Finance I.

Science**8301 Physical Science (C, L)****3**

Prerequisite: 8202 or 8203

Emphasizes energy sources and energy transformations; relates use of energy to effects on the environment and the human population. (For certificate and associate degree programs)

8302 Mechanics (C, L)**3**

Prerequisite: 8209

Studies machines and mechanisms with regard to their stability, movement, effectiveness and construction.

8303 Heat, Light, Sound (C, L)**3**

Prerequisite: 8203

Studies utilization of heat, light and sound as energy forms with respect to their use in modern technology; emphasis on heat, transfer of energy and electromagnetic radiation.

8307 General Chemistry (C, L)**3**

Studies matter in all its forms and reactions, as well as basic concepts of atomic structure, bonding, equilibrium, acid-base chemistry, solutions, and chemical calculations; also introduces principles of organic chemistry and biochemistry. Course emphasizes student expertise in laboratory techniques and analysis.

8308 General Microbiology (C, L)**4**

Introduces fundamental principles and techniques of microbiology, with emphasis on different types of micro-organisms, their nutrition and metabolism and their beneficial and harmful relationships to man.

Science/Skills Advancement**8350 Science Development in Physics****1**

(Pre-Tech)

Introduces concepts in physics that may be used as foundation for the technical curriculum (self-paced format).

8351 Science Development in Chemistry**1**

(Pre-Tech)

Introduces concepts in chemistry that may be used as foundation for the technical curriculum (self-paced format).

8352 Science Development in Biology 1

(Pre-Tech)

Introduces concepts in biology that may be used as foundation for the technical curriculum (self-paced format).

Social Science

8401 Human Relations (C) 4

Concerns the qualities and characteristics which make us human: studies human behavior, motivation, relationships, and human aspects of work; places emphasis on personal awareness and application of concepts studied. (For all divisions as required or elective course)

8402 Applied Psychology (C) 4

Helps students discover and actualize unique capacities and personal strengths in themselves and others, with emphasis on discovering, clarifying and affirming potential for living more fully in each individual.

8403 Psychology of Advertising (C) 4

Covers principles of psychology as they relate to advertising: consumer behavior, life styles, design and color concepts, motivation, consumer self-image and roles. (required by Commercial Art and Industrial Photography)

8404 Environmental Psychology (C) 4

Covers the concepts involved in designing space and objects for human work, living and leisure. (required for Interior Design)

8405 Social Problems (C) 4

Exposees students to study and analysis of contemporary social problems; examines topics such as urban life, technological advance, ecology, crime, drug abuse and over-population, with emphasis on effect upon individual accomplishment and occupations.

8406 Employment Orientation (C) 2

Investigates employment opportunities in general area of study of student's interests and enrollment, including interviews, study of occupational information and sources, exploration of job opportunities and research into specific jobs and fields.

8410 Social Science Development (C) 3

Introduces basic social development in context relevant to employment, job training and job seeking.

X 8411 Developing Personal Potentials (C) 3

Aims toward improving employability and stability of trainees through development of personal potential.

Field Study/Coop Ed

8501 Field Study/Coop Ed (P) 1-15

Offers special project or research type case study, including data collection and data analysis specifically related to occupational area. Course should be a field project within the framework of actual working experience in business or industry, or a structured cooperative experience in which student receives stipend or regular wages.

Business Sciences Course Descriptions

Indp. Accounting

0110 Accounting Principles (C, L or C) 4

Introduces the fundamental principles, techniques and tools of accounting, presenting the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service and mercantile enterprises; includes an introduction to payroll accounting. Practical applications of the principles learned are in use.

0120 Accounting Principles II (C, L or C) 4

Studies partnership, internal control, notes and interest and departmental accounting, in addition to sales procedures and valuation of receivables, inventories and fixed assets.

0122 Business Law I (C) 3

Includes the study of the nature and sources of business law, a description of the judicial system and the nature of torts and crimes for which the law provides punishment, with emphasis placed on legal

situations encountered in the performance of contracts and breach of contracts, the creation of an agency, sales and negotiable instruments.

0124 **Consumer Economics (C)** 3

Includes study and review of the cost of living and price levels, factors affecting consumer choices, buying practices, management of personal and family finances, the role of government in consumer protection and current consumer problems.

0130 **Accounting Principles III (C, L or C)** 4

Introduces branch operation accounting with further development of skill and knowledge of accounting: journal and statement presentation of corporated capital stock, receivables, intangible assets, deferred charges, long-term liabilities, temporary investments and long-term investments.

0140 **Intermediate Accounting I (C, L or C)** 4

Includes intermediate accounting principles related to the form and content of the income statement and the balance sheet, cash receipts, cash disbursements, cash reconciliations, accounts receivable, bad debts, short-term financing and concepts of cost or market inventory valuation.

0141 **Individual Income Taxes (C, L or C)** 4

Prerequisite: 0120

Presents accounting procedure and problems connected with Federal Income Tax Law and state laws for individuals, estates, and trusts.

0142 **Job Order Cost Accounting (C, L or C)** 4

Prerequisite: 0120

Studies job-order cost accounting procedures, manufacturing overhead control, departmentalization, material control, labor control and report forms.

0143 **Business Law II (C)** 3

Continues Business Law I with emphasis on topics including bailments, secured transactions, partnerships and corporations, property, wills and trusts, insurance, suretyship, guaranty and bankruptcy.

0150 **Intermediate Accounting II (C, L or C)** 4

Considers intermediate and advanced accounting principles dealing with corporations, temporary investments, long-term investments, special bond transactions amortization, revaluation of plant and equipment, retirement of plant and equipment, repairs and maintenance, depreciation, natural resources, intangible assets, goodwill, corporate earnings and corporate dividends.

0151 **Process Cost Accounting (C, L or C)** 4

Studies process cost accounting, standard cost procedures, estimating and controlling costs through use of budget and profit analysis.

0152 **Business Income Taxes (C, L or C)** 4

Studies accounting procedure and problems connected with Federal Income Tax Law and state laws for corporations.

0153 **Macroeconomics (C)** 3

Includes analysis of basic economic principles of supply and demand as they affect individual consumer and producer; determination of price and output; allocation of scarce resources and distribution of income.

0154 **Macroeconomics (C)** 3

Includes analysis of national income accounting through study of GNP and components; as well as the operation of the monetary and banking system and a survey of international economic problems.

0155 **Managerial Accounting (C)** 3

Provides understanding of the relationship of accounting records to management decision making, with topics including internal accounting records, the role of data processing and quantitative business analysis.

0156 **Accounting Lab (L)** 1-6

Presents a series of planned accounting learning problems and activities designed to accompany the major concepts and theories included in accounting technology courses.

0157 **Payroll Accounting (C)** 4

Includes advanced accounting principles dealing with consignments, business combinations, business liquidations and consolidated statement presentation.

0162 **Auditing (C)** 3

Studies monetary theory and banking theory as they relate to present-day domestic and international problems, with topics including banking operations, price changes, international monetary relationships and application of monetary and fiscal policy.

0164 **Money and Banking (C)** 3

Studies monetary theory and banking theory as they relate to present-day domestic and international problems, with topics including banking operations, price changes, international monetary relationships and application of monetary and fiscal policy.

0165 **Budgeting (C)** 3

Prerequisite: 0120

Presents procedures in the preparation and use of business budgets, with particular emphasis as aids in coordinating and directing business operations.

0166 Introduction to Management (C)	3	Studies the vital role of management in organizations of various sizes, examining the inter-relationships among various departmental functions and establishment of lines of authority and responsibility; treats managers' duties relating to communications, motivation and delegation of authority.
0167 Seminar in Accounting (C)	1	Allows the accounting student an opportunity to pursue specific areas of interest at a more advanced level in accounting.
0168 Accounting for Supervisors (C)	4	Emphasizes understanding of financial data necessary for supervisors in today's business climate. The course, structured for non-accounting majors, requires students to analyze financial statements to determine levels of efficiency, company performance, and ratio and trend analysis, in addition to budgeting and capital expenditures and price level affects on accounting.
0169 Personal Finance (C)	3	Emphasizes management of individual financial resources to achieve growth and maintenance of personal wealth: home buying and mortgage financing; installment financing; life insurance; securities; commodities and other investment opportunities.

No
Accounting
Credit and Finance Option

0171 Principles of Finance I (C)	3	Covers basic principles of business finance as influenced by capital structure and type of ownership; also sources and methods of financing.
0172 Principles of Finance II (C)	3	Continues Principles of Finance I (0145); covers tools of financial analysis and financial management, problems relating to sources of financing, integration of economic theory as applied to business finance.
0173 Consumer Credit (C)	3	Examines consumer credit and social institutions, economic and social aspects and institutions supplying consumer credit; organizes consumer credit cycle into three basic areas of acquiring, controlling and collect-
		ing, plus study of fundamental activities of credit cycle in relation to various consumer credit grantors.
0174 Credit Procedures (C)	3	Examines principles and methods of credit administration in mercantile and retail fields, including sources of information, credit policy, credit control, legal remedies, and collection techniques.
0175 Credit Management I (C)	3	Studies occupational opportunities in field of credit, management functions of acquiring cycle of credit, and management functions of control cycle of credit in a seminar discussion/research/project setting: combines lectures, discussions, individual research and project work, with written and oral presentation of findings and results by students.
0176 Credit Management II (C)	3	Studies management functions of collection cycle of credit, credit law, and management of credit operations in seminar discussion/research/project setting; combines lectures, discussions, individual research and project work, with written and oral presentation of findings and results by students.
0177 Commercial Credit (C)	3	Presents fundamental theory, principles and practices of credit and collection management needed by business involved with operations of credit and collection phases of business enterprise; treats all phases—commercial, consumer and mortgage credit—with special emphasis on commercial credit and short and intermediate term credit. Also relates and applies acquiring and control functions and accompanying collections policies, procedures, and methods to managerial aspect of credit and collections.
0178 Credit and Collection (C)	3	Covers retail credit operation, credit investigations, opening of credit accounts, retail terms and policies and information on retail credit organizations, as approached from both retail and mercantile standpoint; includes study of mercantile credit operations, credit terms, credit investigations, sources of credit information, analysis of financial statements and methods of collection and follow-up to past due accounts.
0190 Accounting Clerical Procedures	2-8	(C,L or C) Prepares students for specific jobs by means of job training and office simulation, covering in depth basic skills and duties for eight office jobs: Purchase Order Clerk, Sales Order Clerk, Inventory Clerk, Accounts Payable Clerk, Cash Receipts Clerk, Accounts Receiv-

able Clerk, Payroll Clerk and Cash Payments Clerk. Credits do not apply to Accounting Technology A.A.S. degree.

Small Business and Office Management

0323 Business Principles and Organization 3 (C)

Includes an introductory study and analysis of our business system as a whole in relation to our economic society; also introduces business ownership, organization, principles, problems, management, control facilities, administration and practices to develop an understanding of American business enterprises and their functions.

Court Reporting

0412 Vocabulary Building (C) 3

Teaches spelling and vocabulary rules for spelling, effective dictionary use and utilization techniques for new vocabulary words in an intensive course.

0421 Machine Shorthand I (L) 5

Introduces basic theory, arbitraries and phrases, and speed in reading notes, both plate notes from the theory book and student's own notes; stresses speed dictation of 40-80 words per minute and dictation for transcription from familiar and new material.

0431 Machine Shorthand II (L) 5

Continues Machine Shorthand I, with emphasis on completion of basic theory, arbitraries and phrases and speed in reading notes; stresses speed dictation of 60-110 words per minute along with dictation for transcription from familiar and new material.

0432 Speed Building I (L) 1

Stresses development of speed and accuracy from straight copy typing, with minimum exit speed set at 45 net words per minute.

0433 Dictation—Literary I (L) 2

Continues to build machine shorthand vocabulary, with students expected to attain speed of 80-100 words per minute; introduces additional arbitraries, number drills, and medical dictation at 50 words per minute.

0434 Dictation—Jury Charge I (L) 1

Consists of dictation of Jury Charge for practice at 90-100 words per minute.

0441 Speed Building II (L) 1

Develops speed and accuracy from straight copy typing, with minimum exit speed for course set at 50 net words per minute.

0442 Dictation—Literary II & Med I (L) 2

Continues to build machine shorthand vocabulary, with students expected to attain literary speed from 100-120 words per minute; stresses arbitrary and number drills, plus medical dictation at 70 words per minute.

0443 Dictation—Q & A I (L) 3

Places emphasis on taking 2-voice testimony from 90-120 words per minute.

0444 Dictation—Jury Charge II (L) 1

Consists of dictation of Jury Charge to students for practice at 110-120 words per minute.

0451 Dictation—Q & A (L) 2

Places emphasis on taking 2-voice testimony 110-140 words per minute; introduces three-voice question and answer; how to mark exhibits.

0452 Speed Building III (L) 1

Develops speed and accuracy from straight copy typing, with minimum exit speed set at 55 words per minute net.

0453 Medical Terminology (C) 4

Presents ethics of medicine, professional conduct, and words from Greek and Latin prefixes, suffixes, word roots, and combining forms; also teaches student meanings of medical words through the Greek and Latin parts, correct spelling of these terms, and intelligent use of medical dictionary.

0454 Dictation—Literary III & Med II (L) 2

Continues number and arbitrary drills, with reference books introduced and explained and medical dictation practiced at 90 words per minute; students should attain speed of 120-140 words per minute.

0455 Dictation—Jury Charge III (C, L) 2

Dictates jury charge at 130-140 words per minute.

0460 Dictation—Q & A III (L) 3

Places emphasis on taking 2-voice testimony from 130-160 words per minute; 3-voice testimony from 100-130 words per minute.

0461 Transcription 1 (L)	2	0472 Courtroom Punctuation II (C)	4
Gives pre-transcription training necessary for rapid readback and typing transcription practice from student's machine notes; also stresses timed writings and practice necessary for building typing speed and accuracy.		Continues Courtroom Punctuation I with emphasis on punctuation of Jury Charges and Legal Opinions. (Minimum passing for this course is 85 per cent).	
0462 Courtroom Punctuation I (C)	4	0473 Speed Building V (L)	1
Includes punctuation of poorly constructed sentences and reinforcement of rules of punctuation; introduces exceptions used by court reporters, and places emphasis on accurate punctuation of testimony transcripts. (Minimum passing for this course is 85 per cent.)		Develops speed and accuracy from straight copy typing, with minimum exit speed set at 65 net words per minute.	
0463 Speed Building IV (L)	1	0474 Transcription IV (L)	3
Develops speed and accuracy from straight copy typing, with minimum exit speed set at 60 net words per minute.		Places emphasis on students typing from their own notes for a period of five minutes as accurately as possible while maintaining an acceptable rate of transcription speed; minimum of 30 words per minute required for completion of course.	
0464 Transcription II (L)	2	0475 Courtroom Procedures (C, S)	2
Places emphasis on typing from student's own notes for period of five minutes with purpose of typing as accurately as possible while maintaining acceptable rate of transcription speed, with minimum of 20 words per minute required to pass this level of transcription.		Presents simulated courtroom experience in the form of mock trials. Guest lecturers also provide information for students.	
0465 Business Communications II (C)	4	0476 Dictation Q & A V (L)	3
Improves student's ability to handle communications in business and industry, placing emphasis on both oral and written communication problems, teaches the psychology behind successful business correspondence as well as writing various types of business correspondence.		Places emphasis on taking 2-voice testimony from 170-200; practices 3-voice from 140-170, and also gives 4-voice testimony.	
0466 Dictation—Jury Charge IV & Legal Opinion I (L)	1	0477 Dictation—Literary V (L)	1
Dictates Jury Charge and Legal Opinion from 150-160 words per minute.		Dictates literary material at 160-180 words per minute.	
0467 Dictation—Literary IV & Medical III (L)	2	0478 Dictation—Medical IV, Jury V, Legal Opinion II (L)	1
Dictates literary material 140-160 words per minute; medical material at 110 words per minute.		Dictates Jury Charge and Legal Opinion for practice at 170-180 words per minute; medical dictation for practice at 130 words per minute.	
0470 Dictation—Q & A IV (L)	2	0479 Dictation—4-Voice Q & A (L)	1
Places emphasis on taking 2-voice testimony 150-180 words per minute; practices 3-voice testimony 140-170 words per minute; also gives practice at 4-voice testimony.		Presents mock trials consisting of 4 voices for dictation and transcription.	
0471 Transcription III (L)	3	0481 Transcription V (L)	3
Places emphasis on students typing from their own notes for a period of five minutes as accurately as possible while maintaining an acceptable rate of transcription speed (speed ranges 25-39).		Places emphasis on students typing from their notes for a period of 5 minutes, typing as accurately as possible while maintaining an acceptable rate of transcription speed; minimum speed 35 words per minute.	
0482 Speed Building VI (L)	1	0483 Transcription VI (L)	3
		Develops speed and accuracy from straight copy typing, with minimum exit speed set at 70 net words per minute.	
		Places emphasis on students typing from their own	

notes for a period of 5 minutes as accurately as possible while maintaining an acceptable rate of transcription speed, with minimum of 40 words per minute required to pass course.

0484 Dictation—Q & A VI (L) 3
Places emphasis on taking 2-voice testimony 190-225 words per minute; practices 3-voice from 160-190 words per minute; also gives practice in 4-voice testimony. Teaches fundamentals of dictating notes into tape recorder.

0485 Dictation—Medical & Literary VI (L) 2
Requires students to attain literary speed of 180-200 words per minute, with medical dictation practices at 140 words per minute.

0486 Dictation—Jury Charge VI (C, L) 2
Dictates Jury Charge for practice at 190-200 words per minute.

Computer Programming

0510 Introduction to Data Processing (C, L) 5
Provides general introduction to data processing and programming, with emphasis on electronic data processing; includes development of data processing from manual methods through electromechanical to electronic, role of data processing in an organization, data processing applications, computer hardware, internal data representation, stored program concepts, programming systems, introduction to programming, operations research and data processing as a profession.

0511 Introduction to Programming (C, L) 5
Provides basic introduction to computer programming, including basic concepts, procedures and language.

0520 COBOL Programming (C, L) 5
Prerequisite: 0510

Provides working knowledge of programming language COBOL and application to business data processing; student gains proficiency in solving basic business problems with COBOL language.

0521 Computer Operations (C,L) 5
Prerequisite: 0510

Teaches actual computer operations and proficiency in handling and setting up complex disc and tape file runs. Student learns to run book and message control functions and to read job descriptions and flow charts.

0522 Problem Solving Techniques (C) 3

Prerequisite: 0510

Familiarizes student with necessary techniques for efficient solution of computer programming logic problems, utilizing logic examples and exercises to develop confidence and ability to solve programming problems.

0530 COBOL Programming II (C, L) 5

Continues COBOL Programming I with emphasis on complex file handling techniques and use of advanced COBOL extensions. Develops higher level of COBOL proficiency, working knowledge of advanced features and techniques through laboratory experience.

0531 Operating Systems (C, L) 5

Prerequisites: 0510, 0530

Studies computer operating systems, purposes, structure and various functions, providing general understanding of how comprehensive sets of language translators and service programs operating under supervisory coordination of integrated control program form total operating system of a computer.

0540 Systems Analysis and Design (C, L) 4

Prerequisites: 0522, 0530, 0531

Studies functions and techniques of systems analysis, design and development, including science analysis, system flow charting, data collection techniques, file design and management determination of processing and equipment requirements. Course stresses communications between user and data processing department, plus reporting methods; case studies analyze problems that may be encountered and their possible solutions.

0551 Business Programming Applications (C, L) 5

Prerequisites: 0530, 0540

Studies advanced business programming applications with topics relating to distribution, manufacturing, banking and insurance corporations. course supports applications including billing, accounts receivable, sales analysis, payroll, inventory and cost through brief sketch of manual methods and detailed discussion in terms of computer systems, plus exercises in programming.

0560 Data Communications (C) 4

Prerequisites: 0521, 0530, 0531

Develops familiarity with modern data communications techniques as applied to data processing; teaches vocabulary and techniques common to remote processing, time sharing, data transmission, etc.

0570 Assembler Language Programming I	5	0577 Topics in Data Processing II (C, L)	5	
(C, L)		Continues Topics in Data Processing I (0575).		
Familiarizes student with machine-oriented, low-level programming language (language taught depends on machine access, concentrates on instruction set used for commercial application); laboratory includes coding, debugging and testing of assembler language programs.				
		Prerequisite: 0510		
0571 Introduction to Data Processing (C, L)	3	0578 Practicum (P)	1-3	
(non-major)		Basic lab course provides extended practice and skill development.		
Provides supervisory and management level student with understanding of scope and significance of data processing, including punched card unit record equipment, electronic data processing equipment and basic computer concepts.				
0572 Fortran Programming (C, L)	5	0711 Introduction to Hospitality Management (C)	3	
Prerequisite: 0510		Traces growth and development of the lodging industry from early inns to modern high rise and commercial hotels and highway motels, stressing opportunities and future trends in the industry. Also reviews organization and nature of the business, including sales promotion, guest relations, guest room facilities, space utilization, food and beverage facilities, accounting records and financial consideration, as well as administrative control.		
Introduces computational type of problem-oriented language; utilizes arithmetical expressions, conditional control, iteration techniques, input-output specifications, tables and subprograms to solve problems involving computation.				
0573 RPG Programming (C, L)	5	0712 Front Office Procedures (C, L)	4	
Prerequisite: 0510		Introduces front office principles required in today's lodging operations and presents practical problems to enhance the learner's knowledge of front office operations. Develops areas of human and public relations responsibilities of the front office, salesmanship, cashier's charges and posting machines.		
Covers use of compiler language RPG (Report Program Generator) as means of solving business problems, including areas of multiple input and/or output, use of business mathematics in solution of business and other problems; instills productivity with RPG as compiler language.				
0574 PL/I Programming (C, L)	5	0721 Hotel-Motel Supervision (C)	3	
Prerequisite: 0510		Assists the student in learning supervisory skills and organizational methods for maximizing the employer's day-today work performance.		
Familiarizes student with PL/I programming language, its capabilities and limitations. Students learn to use PL/I to solve variety of programming problems, with laboratory including coding, debugging and testing of PL/I programs.				
0575 Topics in Data Processing I (C, L)	5	0722 Apartment Management and Leasing (C)	3	
Includes topics of current interest in data processing or special individual student projects in data processing for the advanced student (projects, research reports and other assignments may vary to fit individual needs and specific needs of Ivy Tech regional institute).		Emphasizes responsibilities of both landlord and tenant in apartment, townhouse and permanent rental properties in general; also condominiums. Includes both small and large complexes, examining business and maintenance details and role of different personnel in each setting.		
0576 Assembler Language Programming II	5	0723 Convention Management (C)	3	
(C, L)		Examines cooperative relationship between successful hotel and motel property sales in small and large properties; emphasizes methods of convention sales.		
Continues Assembler Language Programming I with emphasis on disc and tape programming techniques.				
0724 Financial Management and Control (C)	3	0725		
Studies special application of accounting principles to the hospitality industry; also, business in food and				

lodging industry; methods for keeping track of the business for creditors, owners, and the government; payroll control with special emphasis on those tax laws which apply only to this industry; expense control and other ways to achieve profit-making management.

0725 Institutional Management (C) 3

Studies management problems unique to institutions—boarding schools, professional sport training camps, summer camps, hospitals, extended care facilities, nursing homes, retirement facilities, mental health facilities, prisons—in which students develop an awareness that basic needs of hospitality industry are the same. Guest lectures and field trips to the institutions highlight this study.

0726 Property Management (C) 3

Covers all phases of property management, emphasizing first impression, staffing, training, capital investments, cost analysis, rentals and renovation.

0727 Tourism (C) 3

Provides comprehensive study of tourism principles, practices and philosophies, offering practical and realistic education in the business of tourism, illustrating how and why various components of tourism integrate with other segments of the industry.

0728 Hotel-Motel Seminar (C) 3

Provides an opportunity to examine special problems or topics of current intent through group discussions and guest speakers.

0733 Food & Beverage Management & Service (C) 4

Provides basic understanding of principles of food production and service management, reviewing sanitation, menu planning, controls of cost and labor, and purchasing, storage and merchandising of food and beverages; also discusses problems of labor shortages, convenience foods and changes in consumer tastes.

0742 Food & Beverage Purchasing & Control (C) 4

Studies in detail major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shell fish, meats and alcoholic beverages; outlines essentials of effective food and beverage control, while establishing system for determining sale values for food and beverages.

0744 Sanitation (C)

4

Details fundamentals of sanitation for food service and general cleaning practices, environmental sanitation and scientific principles underlying good sanitation practices; also includes personal hygiene and importance of sanitation from economic, legal and moral point of view.

0752 Sales Promotion (C)

4

Demonstrates how to develop a marketing plan for any size operation and shows how to tie all of the departments of a hotel operation into a coordinated team; emphasizes organization and functioning of sales department, sales tools, techniques, advertising, and types of markets.

0753 Hotel Motel Law (C)

3

Creates an awareness of responsibilities and rights which the law imposes upon and grants to the innkeeper and illustrates the consequences caused by failure in those responsibilities; also discusses attitude of the courts toward the innkeeper involved in litigation.

0760 Hotel & Motel Maintenance I (C)

3

Examines organization of maintenance and engineering department, discussing plumbing, heating ventilation, refrigeration and air conditioning and electrical systems; vertical transportation, structural maintenance, painting, landscaping, contracts, communication, acoustics, fire protection and maintenance of kitchen equipment.

0762 Supervisory Housekeeping (C)

4

Provides introduction to fundamentals of housekeeping management, stressing employee training, record keeping, health and safety, cost control and executive housekeeper responsibilities.

0763 Hotel & Motel Maintenance II (C)

3

Studies the field of maintenance and engineering on an advanced level going beyond the substantive area covered in Maintenance I; provides technical information to establish effective preventive programs as well as maintenance procedures.

Industrial

Industrial Management

0912 Manufacturing Organization I (C)

3

Studies in-depth the typical manufacturing organization for the first-line supervisor: examines in detail the duties and responsibilities of various functions that

make up the manufacturing organization and studies interrelationships of the functions; review organization principles as they apply to the manufacturing operation; and develops some of the basic tools of managerial decision making and applies them to typical case problems.

0913 Techniques of Supervision I (C) 3

Covers employee development, with material directed toward the responsibility of any supervisor, including responsibilities of the supervisor functioning within an organizational structure; relates to communications, motivation, delegation of authority, interviews, orienting and inducting new employees and evaluation of employee performance.

0914 Techniques of Leadership I (C) 3

Covers employee development, with material directed toward the responsibility of any supervisor, including responsibilities of the supervisor functioning within an organizational structure; relates to communications, motivations, delegation of authority, interviews, orienting and inducting new employees and evaluation of employee performance.

0921 Principles of Industrial Safety (C) 3

Covers day-to-day responsibilities of management and supervision toward attaining an accident-free organization, with emphasis on first aid, fire prevention, control, starting and stopping of machines, accident investigations and other preventive measures; also covers methods of advertising good safety practices, rules of plant protection in relation to safety and OSHA.

0923 Techniques of Supervision II (C) 3

Develops necessary skills needed for effective management of people, with various topics developed through group discussion, case studies, and in-basket situations.

0924 Techniques of Leadership II (C) 3

Develops necessary skills needed for effective management of people, with various topics developed through group discussion, case studies and in-basket situations.

0925 Manufacturing Organization II (C) 3

Continues Manufacturing Organization I (0912), studying quality control, research and development, marketing, production and inventory control, personnel, and maintenance functions; also examines forms of ownership, analysis of financial data, capital investment considerations, and budgeting.

0931 Time and Motion Study (C) 3

Studies time and motion in the practical application area using industrial practice as basis for the establishment of rates.

0932 Safety Regulations (C) 3

Studies recording and maintaining an accident severity rate, correctly submitted workmen's compensation claims, insurance claims and managing a safety program in compliance with laws or contractual agreements.

0940 Quality Control (C) 3

Places emphasis on principles and techniques of quality control to fulfill the organizational objectives of completing the job correctly the first time, with the purpose of the course to provide unit managers and supervisors with an understanding of the use of scientific quality control. Topics include vendor-customer relationships, sampling inspections, process control and tests for significance, with emphasis on an individual being able and qualified to determine what type of quality control is best for a particular industry.

0941 Labor Relations (C) 3

Explores development and application of labor laws and practices that form the basis of modern day industrial relations, with topics including history and development of organized labor, federal labor legislation, labor-management laws, civil rights, state laws and regulations, local regulations, federal mediation and conciliation service, the organizing drive, the strike, collective bargaining, anatomy of a labor agreement, handling in-shop grievances and arbitration.

0942 Purchasing and Inventory Control (C) 4

Provides practical approach to procurement with regard to price, quality, quantity and delivery, with personal ethics, legal aspects of contracts, records, performance, and foreign procurement standards discussed in detail, and the role of the purchasing section or department, as a member of management's value analysis team, studied in depth.

0950 Manufacturing Costs and Value Analysis (C) 3

Applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development and manufacturing without affecting quality; differs from cost control in that it is directed toward analyzing value, not cost.

0951 Production Planning and Control (C) 3

Brings the range of concept and techniques to useful application in practical design of production planning, inventory control systems and follow-up.

0952 Work Analysis and Improvement (C)	3	engaged in industry, with instruction dealing with technical fundamentals of important manufacturing processes, industrial materials and the modern machine tools necessary for processing these materials.
0954 Materials Handling (C)	3	Studies applied stresses and quality controls of industrial materials while handling and storing, shelf life of certain materials, weight and mass configuration and vendor's materials specifications.
0956 Managerial Cost Accounting (C)	3	Studies development of standard cost systems, budgets, and use of budgets as control devices; emphasizes methods of presenting cost data and interpreting this data for managerial decision making.
0960 Economics of Industry (C)	3	Covers fundamental economics and basic principles of business systems in everyday terminology, with emphasis on practical economics as opposed to theoretical; includes various types of business organization, costs and pricing, competition, money system, taxes, productivity and automation.
0961 Plant Layout and Process Planning (C)	3	Studies factory planning covering layouts for small and medium-sized plants, layout fundamentals, selection of production equipment and materials handling equipment, emphasizing the most efficient arrangements of work areas to achieve lower manufacturing costs; includes principles, practices and methods of process planning as well as tooling determination, operational sequence, setup and operational time.
0962 Traffic and Transportation Management (C)	3	Presents development of personnel associated with or working in transportation and traffic management field, covering technical developments and other phases of transportation organizations; includes discussions covering the American transportation system, federal regulations, freight traffic territory, freight classification, principles of freight rates and tariffs, shipping documents and their application, special freight services and a study of freight claims.
0963 Manufacturing Processes I (C)	3	Shows how knowledge of present manufacturing processes is of extreme importance to technicians
0964 Industrial Assembly Techniques (C)	3	Studies methods of assembly, fasteners, the uniqueness of various assembly materials, metallurgy, plastics and modern composition.
0967 Drafting and Manufacturing Standards (C)	3	Includes drafting theory and practice with special consideration given to standard practices of dimensioning, tolerancing and notations of tooling components such as proper practices of revolving out of position, line elimination, sectioning and other related areas.
0968 Case Problems in Management (C)	4	Requires the student to pull together all of the quantitative and qualitative skills developed in the program and apply them to the solution of specially designed case problems involving planning, leadership, control and financial analysis functions—a capstone course in the Industrial Management program.
0970 Personnel Management (C)	3	Shows how effectiveness of personnel function is as dependent upon the managers who use or misuse it as it is upon the personnel staff itself, with participants in the course developing a perspective on specific personnel functions and skills to deal more effectively with personnel departments. Topics include manpower planning and development, job descriptions and analysis, employment recruitment, selection and placement, promotions, transfer, separations, wage and salary administration, etc.
0971 Manufacturing Processes II (C)	3	Identifies manufacturing processes and the materials as to design, specifications, facilities and economics, through visitation of various manufacturing concerns.
0973 Training For Results (C)	3	Develops a realistic perspective of training as resource for the organization and provides participants with skills to develop and implement effective training, and topics including the nature of learning, concept teaching, creating a motivating learning atmosphere, the place of audio-visual aids and their use, planned versus spontaneous learning, rote teaching, mnemonic devices, learning curves and learning as problem solving. Participants test concepts presented with

classroom training assignments and will be encouraged to validate them based on their own experiences.

0974 Conference Leadership (C) 3

Shows how sound conference leadership requires a good deal more than subject knowledge and public speaking skills, and how the leader must also be an effective manager capable of drawing on and developing the resources of all conferees. Course assists participants in developing their roles as organizers, facilitators, controllers, summarizers, speakers, problem definers and problem solvers, with individualized conference leading experiences allowing for pulling together the concepts from previous courses and developing new insights for utilization of human resources.

0975 Management Information Systems (C) 3

Advanced seminar develops greater perspective on quantitative skills and their role in effective management and supervision; participants develop working knowledge of various concepts and applications of quantitative business management information systems, with special emphasis on understanding the role of information system persons and developing working relationships with them. Topics include the systems approach to problem identification and solution, information and the management process, system analysis and design and a variety of other management systems. Course develops highly interactive atmosphere using actual organizational examples.

0976 Organizational Structure and Change (C) 3

Shows how knowledge without skills for implementation is as useless to most organizations as is change for the sake of change; investigates organizational structures and presents techniques for implementing planned change that will enhance the organization rather than merely destroy its structure; provides managers and supervisors at all levels with better understanding of the concepts of change and the practical skills to cope with both planned and unplanned change.

0977 Industrial Supervision Seminar (C) 3

Advanced seminar provides participants with unique opportunity to explore variety of leadership styles in light of their own experiences, establishing a testing ground to check effects of various styles on others and a low-risk atmosphere to develop alternative leadership patterns for each individual.

0980 Case Problems in Labor Relations (C) 3

Provides student with briefs of both sides from actual

arbitration cases from which comes a decision based upon the data provided. Student decisions are discussed in class and actual decisions by the arbitrators reviewed to reinforce major points used by arbitrators in deciding cases.

? **0981 Transactional Analysis for Managers 3 (C)**

Examines concepts of Transactional Analysis as they apply to interpersonal communication and human motivation in the industrial workplace, developing in students a basic understanding of TA and skills in using the language, tools and techniques of TA on the job.

0982 Management by Objectives (C) 3

Investigates practical uses, values and problems of MBO with participants developing company, departmental and individual objectives and determining how to constructively implement them, with emphasis on MBO as a tool for management rather than management a tool for it.

X **0983 Time Management (C) 2**

Aids supervisors and other interested personnel who desire to manage the business day more effectively, including effective strategies for time management and concepts of time behavior patterns. Participants engage in specific class exercises involving scheduling and allocation of time, indentifying and handling time wasters, dealing with interruptions, and planning for getting more from the working day.

Indiprile

Marketing

1114 Marketing I (C) 4

Introduces marketing goods and services, with attention paid to marketing mix.

1115 Sales Techniques (C) 4

Overviews selling and applied selling skills, with work of salesmen and psychology of selling given academic coverage; emphasizes selling skills through application of programmed selling situations. A dual purpose course.

1116 Marketing II (C) 4

Continues Market I (1114), utilizing the case study method to apply basic business and marketing knowledge, concepts and principles.

1126 Principles of Wholesaling (C)	4	
Studies wholesaling within the marketing distribution structure, including a marketing overview of designing and managing channels of distribution of which wholesaling is one part. Focuses on the wholesale market and wholesaling middleman, on the interrelationship with manufacturers and retailers, and on the activities incident to the sale of products sold for resale or for business use.		tional success, including probing, supporting, overcoming objections and closing; also focuses on techniques to counsel and train others to improve their selling skills.
1134 Sales Management (C)	4	
Focusing on the role of the sales manager, principally the leadership function, course demonstrates personal selling as the major promotional method used in the American economic system to achieve the primary marketing goal of profitable revenue; includes building a sales team, judging sales performance, territorial management, sales recruiting and interviewing techniques, training and development activities, as well as managing the environment in which the selling effort takes place, principally the field sales office, including sales support and sales liaison operations.		Prerequisites: a minimum of four quarters in Business Science or equivalent in experience.
1135 Principles of Retailing (C)	4	
Studies retailing concepts and practices, with emphasis on retail merchandise planning, buying, pricing, promotion, and controlling activities in established retail operations, with attention to managerial and operational skill needs most demanded by merchant retailers.		Explores primarily small business operations for the self-employed, with coverage applicable to the generalist administrator employed in a small business enterprise; includes entry into small business, whether new, buy-out or franchise; form and structure of the business; financing and tax considerations, including control through accounting and records including hiring, training and getting efficient operations through others; insurance and other business hazards; government regulations and doing business with the government.
1136 Physical Distribution (C)	4	
Studies the physical flow of products and the operation of efficient flow systems, with emphasis on economics of transportation and to rate, traffic service and coordination problems of transportation systems.		
1147 Principles of Advertising (C)	4	
Provides broad coverage of advertising as key element in promoting goods and services in the marketplace, with focus on advertising media and media selection, development of advertising copy strategy, advertising regulations, and organization of advertising functions and activities.		
1148 Principles of Insurance (C)	3	
Introduces the risks faced by business firms and how they might be handled, including property, liability and personnel losses, with attention to insurance contracts and their uses, of individual life, health and pension insurance, as well as public policy, including government regulations and social insurance programs.		
1156 Advanced Sales Techniques (C)	3	
Studies and applies selling skills important to occupa-		
1157 Entrepreneurship (C)	4	
		Prerequisites: a minimum of four quarters in Business Science or equivalent in experience.
		Explores primarily small business operations for the self-employed, with coverage applicable to the generalist administrator employed in a small business enterprise; includes entry into small business, whether new, buy-out or franchise; form and structure of the business; financing and tax considerations, including control through accounting and records including hiring, training and getting efficient operations through others; insurance and other business hazards; government regulations and doing business with the government.
		<i>Ingle</i>
		Secretarial—Administrative
1210 Shorthand I (C)	4	
Introduces symbol, a b c, or machine shorthand with special emphasis on basic theory, brief form, and speed in reading from plate notes or machine notes; introduces dictation with emphasis on writing shorthand outlines or mastery of the machine keyboard.		
1212 Typewriting I (C, L)	4	
Designed for beginners, course covers the development of fundamental touch typewriting techniques and skills and their application, including business letters, manuscripts, centering, tabulation, machine parts and care and speed development.		
1214 Personal Development (C)	3	
Enables students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming, wardrobe, personality and communication skills so they possess the personal qualities necessary for success in their chosen field.		
1220 Shorthand II (C, L)	4	
Emphasizes the taking of dictation, reading of notes, and developing of transcription skills, stressing development of speed and accuracy through drills and tests; stresses essentials of good English principles.		

1222 Typewriting II (C, L)	4	1242 Typewriting IV (C, L)	4
Continues Typewriting I with higher developments of vocational competency, including typing of business letters, forms, manuscripts and tabulations; stresses speed and accuracy with emphasis on production typing problems and speed building.			
1224 Records Management (C)	3		
Acquaints students with methods and procedures of maintaining business records of various types; develops skills in implementing those methods and procedures in practice situations.			
1230 Shorthand III (C, L)	4		
Includes a continued review of fundamentals with emphasis on skill in taking new matter dictation and mailable transcription; stresses essentials of good English principles.			
1232 Typewriting III (C, L)	4		
Improves production typewriting ability in business situations, with problem and production techniques including complex tabulation, statistical reports, rough drafts, manuscripts and forms.			
1233 Key Device Training (C, L)	3		
Prerequisite: 1212 Develops high level of skill in operating key punch, or key to tape, or key to disc equipment; stresses speed and accuracy.			
1235 Office Calculating Machines (C, L)	3		
Gives the student a competent skill level in the application of related problems and the basic operation of adding and calculating machines representative of those used in business offices.			
1238 Advanced Key Device Training (C, L, P)	4		
Extends skill development to deal with a broader range of machine operations and service requests.			
1240 Shorthand IV (C, L)	4		
Continues Shorthand III.			
1241 Clerical Office Procedures (C, L)	3		
Prerequisite: 1222 Acquaints the student with opportunities available to clerical workers, including general qualifications required. Student learns such skills as filing, machine transcription, duplicating machine techniques and receptionist training, with introduction to duties of the Legal, Medical and Administrative Secretary also provided.			
1242 Typewriting IV (C, L)	4		
Continues Typewriting III.			
1243 Office Management and Procedures (C)	3		
Studies human relations, personnel department functions and employment procedures, with emphasis on management skills and techniques of business offices; provides experience in applying skills and knowledge gained in office management situations.			
1250 Shorthand V (C, L)	4		
Continues Shorthand III and IV with emphasis on technically specialized materials.			
1260 Shorthand VI (C, L)	4		
Includes emphasis on speed building, new matter dictation and some transcription work on the production of mailable copy; material is designed to acquaint student with technical terminology, phrases and abbreviations peculiar to certain organizations.			
1261 Administrative Office Practice (C, L)	3		
Emphasizes in a finishing course the skills, techniques, and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing, telephoning, personal hygiene, dress and applying for a job; provides laboratory experience in applying skills and knowledge gained in previous business courses.			
1262 Typewriting V (C, L)	4		
Stresses improvement of production techniques including correspondence, business forms, manuscripts, tabulation and secretarial projects; also, transcription of machine-recorded dictation, correct use of grammar, spelling and letter format; develops a high degree of productivity and skill.			
1264 Intensive Secretarial Lab I (C, L)	6		
Entry-level secretarial program incorporates recorded simulations designed to provide realistic, meaningful learning experiences for college students; "employed" as secretaries, students perform the same duties that are required by prospective employers.			
1267 Machine Dictation and Machine Transcription (L)	2		
Helps the student develop skills in transcription and communication to function more efficiently and effectively within an office situation; integrates skills learned in other areas of business education, such as Typing, Technical Communications and Business Communications and broadens the students' marketable skills, enabling them to have upward mobility in the business world and more readily attain their vocational goals.			

Introduces student to operation of machine transcribing equipment, stressing the typing of perfect mailable copy of business letters.

1269 Intensive Secretarial Lab II (C,L) 6

Provides practice in handling wide range of duties and responsibilities involved in executive-level secretarial work; prepares students to set priorities, make decisions, organize work, supervise co-workers and assume new responsibilities with advancement; also provides latest information on new developments in equipment, services and practices.

done
Secretarial—Legal

1310 Legal Terminology (C) 2

Presents the ethics of law, professional conduct, and words from Latin prefixes, suffixes, word roots and combining forms, teaching the student meanings of legal words through Latin parts, correct spelling of these terms, and intelligent use of the legal dictionary.

1313 Legal Office Bookkeeping (C, L) 4

Introduces basic principles of bookkeeping as used primarily in a legal office setting, including the principles of debit and credit, double entry bookkeeping, use of journals (particularly combine journal) and analyzing transactions, as well as the use of ledgers, posting procedures, cash and accrual bases of accounting, handling petty cash, banking procedures, payroll, work sheets, balance sheets and income statements.

1321 Legal Office Procedure (C) 4

Provides basic understanding of the secretarial and bookkeeping duties and responsibilities as pertinent to the legal profession, including legal correspondence and records, client files, filing, financial administration, correct contact procedures with clients, courts, and professional agencies, plus considerations for desirable personality traits, interpersonal relationships and attitudes within the law office.

1331 Legal Office Communications (C, L) 3

Studies communications skills development directed toward the legal office, with emphasis on oral and written communications directed specifically toward the legal profession.

1341 Legal Office Practice (C) 4

Emphasizes in a finishing course the skills, techniques and attitudes businessmen desire in office workers, including review instruction in human relations, office machines, business correspondence, mailing, filing,

telephoning, personal hygiene, dress and applying for a job; also provides laboratory experience in applying skills and knowledge gained in previous business courses toward handling legal forms and procedures common to a legal office; includes research assignments, maintaining legal calendars and files.

1342 Typewriting IV (Legal) (C, L) 4

Improves production typewriting ability in legal situations; emphasizes preparing legal documents.

1345 Shorthand IV (Legal) (C, L) 4

Develops student competence in specialized legal dictation and transcription of legal correspondence, forms and documents with emphasis on constructing shorthand outlines of legal terms.

Secretarial—Medical

1431 Medical Filing and Indexing (C, L) 3

Acquaints the student with methods and procedures of maintaining business records of various types, and develops skill in implementing those methods and procedures in practice situations.

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Graphics & Media Course Descriptions

Commercial and Industrial Photography

1610 Introduction to Photography I (C, L) 2

Consists of basic small format picture-taking and dark-room techniques designed for the student with little or no prior photographic background for skills development and credit. (Course is not applicable toward degree in Commercial Industrial Photography.)

1611 Introduction to Photography II (C, L) 2

Continues Introduction to Photography I, with emphasis on equipment, materials, lighting and visualizing with a camera.

1614 Fundamentals of Photography I (L)	2	
Consists of basic picture-taking, film developing and printing, with all work done in black and white.		
1615 Photographic Science and Theory I (L)	3	
Studies camera types, exposure meters, basic chemistry of the darkroom and films and photographic papers.		
1616 Studio Practice I (L)	2	
Studies use of one light and reflectors and familiarizes students with basic studio equipment and setup procedures.		
1624 Fundamentals of Photography II (L)	2	
Continues Fundamentals of Photography I (1614), with emphasis on composition and refinement of techniques used in camera work and black and white darkroom processes.		
1625 Photographic Science and Theory II (C)	3	
Studies light and lenses as well as black and white developers.		
1626 Studio Practices II (L)	2	
Consists of use of multiple light set-ups and achieving proper ratios and exposures, plus use of diffusers, barndoors, scrims and snoots.		
1627 Darkroom Techniques I (L)	2	
Introduces black and white film and print processing.		
1628 Darkroom Techniques II (C, L)	3	
Studies troubleshooting in the darkroom and contrast control in film and print processing; applies techniques needed for consistency in black and white printing and processing, and compares and tests a number of developers.		
1632 Architectural Photography (L)	2	
Consists of photographic architectural structures, including interiors and exteriors.		
1633 Sensitometry (C)	2	
Consists of estimation of response of photographic materials to radiant energy, including methods of exposing, processing, measurement and data evaluation.		
1634 Sequential Photography (C, L)	3	
Presents use of the photograph as an illustrative tool for story telling.		
1635 Product Photography (C, L)	3	
Introduces photographing table-top and larger products including set-up and lighting techniques for commercial purposes.		
1636 Studio Practice III (L)	2	
Practices use of view cameras and filters.		
1638 Darkroom Techniques III (L)	2	
Studies use of live film, including processing of color transparencies, color negatives and color prints.		
1642 Industrial and Commercial Techniques I (C, L)	2	
Studies use of view cameras in controlling perspective and distortion, as well as problems of lighting and shooting on location.		
1644 Studio Practice IV (L)	2	
Explores lighting of unusual situations and materials such as glass, chrome, plastic and wood, and large objects.		
1645 Photographic Composition (C, L)	3	
Studies principles of photographic composition.		
1650 Advanced Photographic Composition (C, L)	2	
Continues study of Photographic Composition (1645) with emphasis on individual style.		
1652 Industrial and Commercial Techniques II (C, L)	3	
Deals with producing photographs for reproduction with special emphasis on shooting exploded views and parts catalog shots.		
1654 Product Illustration (L)	2	
Studies illustrative aspects of photography as applied to products and commercial applications.		
1655 Basic Portrait Lighting (C, L)	2	
Studies studio portrait lighting techniques and equipment.		
1660 Black and White Portraiture (C, L)	2	
Deals with modern specialized techniques used in camera work and printing black and white portraits.		
1661 Photographic Science and Theory III (C)	3	
Studies color photography including transparencies, negatives, prints, and the processes used to produce them.		

1662 Industrial and Commercial Techniques III (C,L)	3	1677 Custom Quantity Printing (C, L)	2
Explores techniques of painted light, rear screen projection and product illustration.			Presents methods used to produce custom prints in large quantities.
1663 Color Portraiture (C,L)	2	1678 Color Negative Retouching and Print Finishing (C, L)	2
Presents modern specialized techniques used in camera work and printing color portraits.			Consists of retouching color negatives and prints using modern materials and methods.
1664 Negative Retouching (C,L)	2	1679 Market Survey (C, L)	2
Presents techniques of retouching black and white portrait negatives.			Students conduct a survey of the photographic industry in a given area and prepare a statistical report.
1665 Custom Color Printing (C,L)	2	1680 Natural Light Portraiture (C, L)	2
Presents comprehensive theoretical and practical aspects of color for the photographer.			Consists of photographing people by natural light including posing techniques, camera work and special equipment and techniques.
1668 Special Commercial Techniques (C,L)	3	1681 Portfolio Preparation (C, L)	3
Consists of techniques of a specialized nature used in lighting, camera work and processing commercial photography.			Students will produce the needed photographs for their portfolio as determined by a faculty review.
1670 Fundamentals of Optics (C)	2		
Studies behavior and control of light in lenses.			
1671 Advanced Portraiture (C)	2		
Presents advanced portraiture including groups and special effects.			
1672 Industrial and Commercial Techniques IV (C, L)	3		
Studies techniques of photographic situation illustrations, architectural structures and night exposures.			
1673 Advanced Product Photography (C, L)	2		
Presents large format color product photography.			
1674 Journalistic and Editorial Photography (C, L)	2		
Consists of production of photographs with a storytelling approach, including writing of captions.			
1675 Specialized Industrial Techniques (C, L)	2		
Covers specialized photographic techniques used in industry, such as infra-red, time-motion study photographs, and stress studies.			
1676 Advanced Darkroom Techniques (C, L)	2		
Presents rapid access processing, production of contrast masks and internegatives and the use of color analyzers.			
		Commercial Art	
1801 Basic Color Mixing and Figure Organization (C, L)	3		
Develops skills through lectures, projects and lab experiments in color mixing and compositional organization. (Intended for persons with little or no art background, course is not applicable toward an Associate Degree in Commercial Art.)			
1802 Introduction to Aqua Med (C, L)	3		
Uses lecture, demonstrations and projects in gouache, polymer and watercolor as a visual medium. (For persons with little or no prior experience, course is not applicable toward an Associate Degree in Commercial Art.)			
1803 Developmental Drawing Techniques I (C, L)	3		
Presents experimental projects, lectures and lab instruction in visualizing through the medium of the drawn image. (Not applicable toward an Associate Degree in Commercial Art.)			
1804 Introduction to Video Taping Processes (C, L)	2		
Covers theory use and manipulation of video tape equipment. (For persons with little or no prior experi-			

ence, course is not applicable toward an Associate Degree in A/V Communications Technology.)

1805 Introduction to Audio Taping (C, L) 2

Covers intensively the practice and theory of audio taping. (For persons with little or no prior experience, course is not applicable toward an Associate Degree in A/V Communications Technology.)

1806 AV Slide Production (C, L) 2

Teaches complete process of simple multimedia presentation, from setting objective to evaluation. (For persons with little or no prior experience, course is not applicable toward an Associate Degree in A/V Communications Technology.)

1810 Composition and Design Fundamentals (C, L) 2

Aids student in forming understanding of approaches to tonal relationships, color complements and contrasts; explores two dimensional design shapes and basic elements through application.

1811 Introduction to Illustration Media (C, L) 2

Introduces watercolor, gouache and acrylic.

1812 Basic Drawing Fundamentals I (C, L) 2

Develops understanding of basic drawing concepts such as media use, perspective and accuracy through the use of line and mass of volume.

1813 Visual Arts Careers Orientation (C, L) 2

Investigates art pursuits including research of jobs, opportunities and terminology, with activities including interview, field observation and collecting of career information.

1814 Basic Drawing Techniques (L) 2

Develops drawing skills through use of basic media and its application.

1815 Composition and Design Techniques (L) 2

Presents two dimensional concepts and shapes, plus chroma and value through application.

1816 Illustration Techniques I (L) 2

Affords opportunity for student to demonstrate dexterity in application of transparent and opaque aqua-media.

1820 Composition and Design II (C, L) 2

Student deals with three-dimensional concepts of visual imagery, color optics and dynamics, with the illusion of 3D and the actuality of form and the use,

limitations and physical manufacture of 3D concepts for commercial use.

1821 Illustration Media II (C, L) 2

Concentrates on aqua media with emphasis on various media applications.

1822 Basic Drawing Techniques II (L) 2

Provides further experiences in pencil and ink and introduces felt pen techniques with emphasis on quality and accuracy.

1823 Illustration Techniques II (L) 2

Applies practical techniques to projects such as background, spot and product illustration with aqua media.

1824 Typographing Techniques (L) 2

Presents different methods of spacing, line count, comping, and letter-forms for layout and finished art applications.

1825 Creative Typography (C, L) 3

Presents lectures, demonstrations and projects directed toward using type as a design element in visual art.

1826 Airbrush Rendering (C, L) 2

Introduces concepts and projects in using the airbrush to render visuals in both black and white and color.

1827 Mixed Media Figure Drawing (L) 2

Presents concepts and practices in using two or more media in combination for visual effect and impact.

1828 Multi Media Figure Drawing (L) 2

Presents concepts, problems and discussions of various media which can be used to illustrate figures, plus advantages and disadvantages of each medium.

1830 Typographic Theory (C, L) 3

Introduces typography and its many uses.

1831 Black and White Illustration (C, L) 2

Presents concentrated study in black and white illustration for reproduction.

1832 Introduction to Photography (C, L) 3

Covers theory and practical application of basic camera types and teaches photography relationships to commercial art and illustrative techniques in basic preparatory course in photography fundamentals.

1833 Commercial Visual Arts History (C, L) 2

Covers commercial visual arts development from the 1800's to current times; covers all aspects of visual

art and relates them to photography, art, interior design, communications, industrial design and television, with emphasis on function, development and impact of various fields in our current socio-economic markets.

1834 Black and White Media Technique (L) 2
Emphasizes pen and ink, dry brush, gouache and other black and white media with use of mechanical instruments for black ad work.

1835 Sketch Book Drawing (L) 2
Introduces anatomy through spontaneous drawing and visual perception.

1836 Visual Arts Processes (C, L) 2
Explores how the artist can shape man's environment and the problems of visual communications.

1840 Layout Design Fundamentals I (C, L) 2
Deals with basic concepts of layout and how they relate to finished art and the use of various media and materials.

1841 Airbrush Photo Retouching (C, L) 2
Studio projects in photo retouching from light to cut-away retouching techniques.

1842 Layout Design Techniques I (L) 2
Relates to drawing and composition and their application as layout techniques used in brochures, ads, and direct mail projects.

1843 Life Drawing Anatomy (C, L) 2
Student studies and draws accurate anatomical renderings of the skeletal-muscular formations of the torso, limbs and cranial areas of the human body.

1845 Life Drawing Techniques I (L) 2
Consists of intensive studio work with emphasis on the human figure's importance in illustration.

1847 Keylining Fundamentals I (C, L) 2
Introduces preparation of art for printing.

1850 Layout Design Fundamentals II (C, L) 2
Deals with concepts in layout design, techniques of visualization and how they relate to format, reproduction and finished art.

1851 Illustration Concentration I (C, L) 3
Consists of student and instructor-designed projects directed toward enhancing knowledge and skills of illustration in a specific area.

1853 Figure Rendering (C, L) 2
Consists of studio projects in the rendering of the human figure as used in illustrations.

1854 Layout Design Techniques II (L) 2
Presents application of layout concepts in rough, semi-comprehensive and comprehensive techniques in single to process color visuals.

1855 Creative Illustration Concepts (C, L) 2
Studies visual techniques such as vignetting, resist impasto, flat pattern, and scale, emphasis and position of elements on the illustrative field.

1856 Creative Illustration Methods (L) 2
Consists of studio projects in high design and creative techniques.

1857 Figure Drawing for Layout (C, L) 2
Consists of studio projects in executing draped and undraped figures to achieve natural life-like situation visuals for layout.

1858 Storyboard Techniques (L) 2
Studies storyboards as visual tools for 35 mm and TV formats; also studies field size and position and quality of visual techniques.

1859 Illustration Concentration II (C, L) 3
Consists of student and professionally designed projects with the emphasis on quality, completion time and suitability to project requirements; students execute projects under the direction of a field professional whenever possible.

1860 Keylining Techniques I (L) 2
Develops basic techniques in keylining with emphasis on line and halftone art requirements for reproduction.

1861 Storyboard Concepts (C, L) 2
Consists of studio projects in multi-field sizes, sequencing and value and chromatic alignment.

1868 Special Darkroom Techniques (C, L) 3
Studies photographic processes, chemicals, and paper.

1869 Darkroom Processes (L) 2
Studies photographic processes, chemicals, and paper.

1870 Keylining Fundamentals II (C, L) 2
Studies keylining in relation to mechanical specifications, camera ready preparation and multiple page signatures.

Some
Interior Design

2010 Composition and Design I (C) 4

Studies the basic elements of two-dimensional design and use of these elements in creative work as related to field of interior design; also studies principles of drawing flat elevations.

2011 Color Theory (C) 4

Includes intensive exploration of color theory, expression, range, key and psychology, as related to individual and family with respect to living with color; also covers practical application of problems in the use of color.

2012 History of Art (C) 3

Presents art from prehistoric times through Greek and Roman times, presenting a view of the art of different eras in light of cultural backgrounds and interrelation of major periods of art history; studies the major changes reflected in the art of the times, also art as it relates to the designer and society in which it developed.

2013 Fundamentals of Structural Design I (C, L) 4

Studies fundamentals of drafting and use of drafting equipment and building materials used in the architectural structure.

2020 Composition and Design II (C, L) 4

Covers 3-dimensional concepts as related to perspective drawings and teaches students how to execute renderings of actual rooms for realistic presentation to clients.

2021 Textiles I (C, L) 3

Studies textile fibers, weaves, finishes, yarns and dyeing processes, showing how each of these units relate to the quality of textiles found on the market.

2022 Fundamentals of Interior Design I (C) 3

Deals with study of window treatments, floor coverings, wall treatments, lighting, accessories, furniture styles, elements and principles of design.

2023 Fundamentals of Structural Design II (C) 4

Students design and draw blueprint plans for a residential structure of their choosing.

2031 Textiles II (C) 4

Emphasizes textiles as they relate to the field of interior decoration, covering physical properties and characteristics of carpets, wall coverings, upholstery and draperies.

1871 AV Art Design (C, L) 2

Presents lectures, discussion and projects concerning the preparation of charts, graphs, flip charts, transparencies and slides used in the audio-visual communication processes.

1872 Keylining Techniques II (L) 2

Consists of studio projects in two and four-page signatures with all live visuals in position.

1873 TV Art Design (C, L) 2

Consists of study and execution of art produced for direct or slide use on TV with special emphasis on chron and value alignment and field size and field organization.

1874 Medical Illustration (C, L) 2

Presents concepts, practices and projects directed toward illustrative techniques unique to the medical profession; projects are coordinated with local medical organizations to assure applicability of concept and illustrative techniques.

1875 Fashion Illustration (C, L) 2

Presents concepts and exercises in the production of line and wash figure illustrations for newspaper and magazine usage.

1881 Technical Illustration (C, L) 2

Presents concepts and techniques in illustrating visuals with emphasis on detail configurations and visual clarity, with special consideration given to ultraways and exploded views.

1883 Specialized Layout Concepts (C, L) 2

Studies layout techniques unique to such publications as catalogs, house organs, annual reports, etc., with special emphasis on continuity and suitability of format.

1884 Specialized Layout Techniques (L) 2

Consists of studio projects in applying the theories of designing specialized publications; stresses concept continuity, efficiency of space utilization and practicality of production.

1885 Portfolio Preparation I (C, L) 3

Consists of evaluation, finishing and scheduling processes in organizing a portfolio for job interviews.

1886 Portfolio Preparation II (C, L) 3

Consists of execution, finishing and discussion of artwork to cover prior weaknesses in portfolio subject matter.

2032 Fundamentals of Interior Design II (C) 3	Concentrates on furniture styles and their development from the Renaissance period to today.	design interiors with such things as sound, light, and artificial light level, traffic flow, heating, coding and visual aesthetics of major concern.
2040 Consumer Education for Interiors (C) 3	Studies factors which influence the consuming public; also teaches students to examine merchandise and merchandise information to determine the best buy for a given amount of money, with a full budget completed for specified case study.	2057 Custom Textiles and Furniture (C, L) 3
2041 Furniture Selection and Arrangement I (C) 4	Enables students to recognize quality furniture pieces through study of construction techniques; identifies furniture types, furniture woods as to color and graining, and common size standards for various pieces.	Studies processes, cost and techniques involved in custom furnishings such as silk-screened fabrics, woven rugs, limited production upholstery fabrics and custom-made cabinets and furniture, with experimental projects in silk screening fabrics and simplistic furniture design executed by the students.
2042 Advanced Textiles (C) 4	Offers practical problems on proper method of estimating and installing carpet, drapery and wall coverings, with students researching and executing textile projects for class presentation.	2060 Applied Interior Design II (C) 5
2050 Applied Interior Design I (C) 5	Consists of students researching and developing solutions for case studies with residential application, with complete cost and time accounts kept, purchase orders issued and follow-up.	Emphasizes researching and developing solutions for case studies with commercial application of the principles and techniques learned for creative display work, with students working in the field.
2051 Display I (C) 5	Studies basic principles governing displays and special techniques and equipment required in carrying out display work.	2061 Display II (C) 3
2052 Retailing (C) 3	Covers business location, building fixtures and equipment, store layout, retail management organization, purchasing procedures, merchandise discounts and ordering policies, product inventory control systems, planning the merchandise budget, receiving, checking and marketing merchandise, retail store promotions, pricing, retail store services and trends in marketing.	Continues Display I (2051) with emphasis on the practical application of the principles and techniques learned for creative display work, with students working in the field.
2053 Furniture Selection and Arrangement II (C) 3	Presents practical applications in analyzing existing conditions of interior or areas, with students working with basic floor plans and assigned furnishings to be arranged with advancement to floor plans of various types.	2062 Salesmanship (C) 3
2055 Environmental Design (C, L) 2	Studies environmental factors as they relate to human performance, behavior and comfort; students will	Surveys sales and techniques of selling a service, with equal stress placed on selling the product as well as the service; covers all phases of sales, including approach, demonstration, close and departure.
2063 Space Planning—Commercial (L) 2		Consists of students completing projects intended for commercial use, with major considerations personnel task performance, traffic, environmental control, wear and maintenance factors, and budget cost control; also studies fixtures, retail management, store services, market merchandising, pricing, etc.
2064 Merchandise Buying Techniques (C, L) 2		Covers management organization procedures, quantity buying as opposed to individual buying, source discounts as stocking and non-stocking dealerships, and purchasing for individual client use and walk-in trade.
2070 Space Planning—Production (Mobile and Modular) (C, L) 2		Studies production space planning techniques for all types of manufactured housing, including floor plans, mass production, capabilities of design, visual alteration of home without major structural changes, materials selection versus quantity purchasing and volume, and amortization of special design features; also code requirements, anticipated life span of the structure and wear use factors for specialized structures.

2071 Lighting Techniques (C)	2	Studies the techniques and special effects of lighting relevant to all aspects of interior design.
2072 Installation Procedures (C)	2	Studies installation methods of interior materials to develop understanding of materials' specifications.
2073 Kitchen and Bath Planning (C)	2	Prerequisite: 2013 Studies fundamentals of space requirements for kitchen and bath; also, cabinetry standardization.
2074 Office Landscaping (C)	3	Prerequisites: 2010, 2013, 2020, 2023, 2041, 2053, 2060, 2071 Studies space planning based on flexible systems to accommodate changing commercial needs.
<i>NC</i>		
Printing		
2210 Type Composition for Reproduction (C, L)	2	Introduces photo typesetting, stressing operations and capabilities of the equipment so students can produce own material.
2211 Art and Copy Preparation (C, L)	2	Provides students with basic principles of layout and design techniques; covers usage of the various tools, materials and equipment for completing the different types of layout.
2212 Layout and Stripping Flats (C, L)	2	Provides instruction in basic operations required to layout and strip flats for black and white reproduction work, with various tools, materials, and equipment used in this operation covered and practiced by students.
2213 General Printing Processes (C, L)	2	Stresses operations involved before actual press work, including preparation of inks, fountain solutions and other supplies used by the printer; plus operations of bindery equipment used after the final product is printed.
2214 Camera Fundamentals (C, L)	2	Provides instruction in the operation of process cameras, emphasizing line photography techniques and practicing fundamentals of the camera and darkroom procedures.
2215 Plate Making Fundamentals (C, L)	2	Covers fundamentals of processing of plates and plate development, including tools, materials and equipment used by the plate maker as practiced by the students.
2216 Offset Presswork (C, L)	2	Introduces common small press duplicators, providing correct operational procedures and actual work experience for black and white.
2221 Camera-Line and Halftone (C, L)	2	Covers methods and techniques of photography continuous tone copy into printable halftones, understanding of densitometry, halftone computer wheels, screens, screen ranges, flash exposures, effects of highlights and show range. (requires experience in line negative work)
2222 Stripping Line and Halftone Negatives (C, L)	2	Stresses different methods of stripping line and halftone combinations; also double burns, step and repeat, work and turn, register systems and mechanical color.
2223 Photo Offset Fundamentals (C, L)	2	Introduces students to larger duplicating presses they will be using in actual hands-on work; stresses thorough understanding of offset fundamentals.
2224 Printing Estimating (C)	3	Consists primarily of estimating each individual task of printing job and consolidating it to compute the entire cost of the job; also requests for estimates for jobs and of estimate sheets for the customers, including paper cost, typesetting costs, press costs and bindery costs.
2225 Offset Presswork I (C, L)	3	Presents experimental press work that will relate half-tones, register work, work and turn, and mechanical color printing, stressing accuracy in operating equipment to producing the final printed material.
2231 Advanced Camera (C, L)	2	Requires students to shoot negatives of mechanical color for 3, 4 or 5 color work. Stresses register of all work, with students expected to be able to handle any camera work given them at this time.
2232 Offset Presswork Operations (C, L)	2	Completes material gathered in 2240, with special

care taken in press set and then observed for completion of this work.

2233 Offset Presswork II (C, L) 3

Stresses accuracy for ink coverage, neatness and register of every sheet printed, with students expected to be able to handle work of larger duration on any duplication in the lab.

2240 Special Effect Camera Work (C, L) 2

Stresses learning involving duotones, special effect screens, techniques in shooting and developing of film, with students encouraged to experiment under guidance of instructor to obtain different special effects.

2241 Printing Production Practices (C, L) 2

Emphasizes press make ready and cleaning between color runs, with students beginning to operate press as they would in a job assignment.

2242 Press Troubleshooting (C, L) 2

Covers techniques of spotting malfunctions and quickly correcting them to insure continued press runs, with emphasis on correct setting of damping and inking systems, pull out roller, stop fingers and feed rollers.

2243 Offset Presswork III (C, L) 3

Consists of experimental full production runs using the larger presses of the printing laboratory.

2244 Ink and Paper for Offset (C, L) 2

Explains the manufacture of ink and paper and discusses problems that arise because of the different properties of inks and papers, plus identification of papers and actual ink mixing.

2251 Special Problems in Offset Preparation (C, L) 3

Assigns to students a number of activities and responsibilities unique to the printing field, ranging from responsibilities of supervisor and directing groups of workers under instructors' direction to survey of research projects in areas of student deficiencies.

2252 Manufacturing and Organization (C) 3

Studies in-depth the first-line supervisor and other management personnel who are interested in the inter-relationships of the various departmental functions and the overall management problems encountered in a manufacturing organization, including the establishment of lines of authority, duties and responsibilities and rules for charting an organizational structure; also reviews manufacturing, engineering and

research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems.

2253 Supervision I (C) 3

Covers management development of any supervisor, including responsibilities of the supervisor functioning within an organizational structure, relating to communications, motivation, delegation of authority, interviews, orienting and inducting new employees, and evaluation of employee performance.

2254 Supervision II (C) 3

Covers written and oral communications, with stress on preparation and presentation skills.

2255 Printing Specialization (C, L) 4

Allows students to develop in areas of printing technology of interest, with the main objective to make the students more employable after graduation.

2262 Production Control (C, L) 3

Aims toward developing in students ability to oversee a number of operations at one time in a typical print shop; also acquaints students with inventory controls, ordering of equipment and vendors' catalogs.

2263 Introduction to Photo Typesetting (C, L) 3

The course is divided into 2 sections. Section I teaches students basic phototypesetting concepts and terms; Section II shows students how to operate a phototypesetter and perform all the typesetting formats within the capability of the machine.

2264 Preventative Maintenance (C, L) 2

Develops preventive maintenance programs for each area of printing, with various pieces of printing equipment checked periodically for wear points and maintenance schedules prepared for each area; also discusses supplies and equipment necessary to perform in depth maintenance.

Library Resource Aide

2415 AV Equipment Operations & Maintenance (C, L) 3

Teaches students to operate variety of AV equipment; covers basic maintenance procedures for various hardware items.

2417 Library and Learning Resource Center Fund. I (C)	3	of libraries, with emphasis on becoming familiar with wide variety of reference tools and books related to children's services.
Presents a general introduction to all major phases of library and learning resource center operations, especially as they pertain to the role of "library aides"; includes library history, library systems, organizational patterns, technical and public services and media systems.		
2418 Library and Learning Resource Center Fund. II (C, L)	3	
Provides an introduction to the various types of library materials, their organization, characteristics and use in support of the library's function, with emphasis on reference service and in-depth knowledge of standard reference tools.		
2419 Library Forms and Records (C)	3	
Introduces standard forms and record keeping including shelf listing, serials control and filing as they apply to library functions.		
2424 Library Technical Services I (C)	3	
Introduces basic procedures in ordering, receiving and processing library materials, including mending, book repair and physical preparation of the materials for shelving.		
2425 AV Productions (C, L)	3	
Introduces students to producing a variety of AV software and preparing catalog cards for produced and commercial media.		
2426 Library Technical Services II (C, L)	3	
Covers simple cataloging and classifying procedures, practice in card preparation and maintenance of card catalog.		
2427 Library Operations and Practices (P)	5	
Prerequisite: Typing II		
Exposes students to service demands of patrons and the operations that provide the service, with students gaining hands-on experiences in a variety of tasks, including circulation services, reference services, vertical file maintenance, displays, etc.; requires actual experience an LRC or library environment.		
2433 Library Public Services I (C)	3	
Exposes students to basic skills and operations in areas of public assistance including circulation, informational services, inter-library loan and special programs.		
2434 Library Public Services II (C)	2	
Introduces students to the organization, operation and services of the reference department in various types		
2441 Studio Lighting and Set Up Techniques (C, L)	3	
Provides basics of studio lighting and familiarity with sets, equipment and production, with individual implementation of lecture materials in lab students' responsibility.		
X 2443 Introduction to Health Science Library (C, L)	3	
Introduces the hospital organizational structures and the standards for hospital libraries, also familiarizing students with basic reference and bibliographic tools used to give information services in the Health Sciences.		

Health Occupations Course Descriptions

Core and Special Courses

9305 Technical Mathematics for Health Occupations (C)	5
Provides health occupations students with a basic course in technical mathematics, including a review of arithmetic, basic concepts of algebra, graphing geometry and logarithms, including also 12 hours of correlation problems specific to the students' technical fields.	
9306 Health Careers Mathematics (C)	5
Provides basic mathematics background needed in subsequent health occupations program courses, including basic arithmetic, exponents, directed numbers, operations of arithmetic using scientific nota-	

tion, Roman numerals, conversions involving metric, apothecaries and household systems of measurement, temperature conversions between Centigrade and Fahrenheit units, simple equations and the construction and interpretation of graphs.

9307 Health Careers Biology I (C, L) 2

Introduces fundamental biological concepts of organization, cell structure and respiratory processes.

9308 Health Careers Biology II (C, L) 2

Introduces fundamental biological concepts of cellular control mechanisms in a 2-hour course, with emphasis on processes of protein synthesis, gene control, development, differentiation, reproduction, basic genetics and cybernetic systems.

9310 Pharmacology for Licensed Practical Nurses (C) 4

Presents principles of action for drugs, correct dosage, methods of administration, symptoms of overdose and abnormal reactions that may arise from individual differences in particular patients.

9311 Mathematics of Pharmacology II (C, L) 2

Presents basic principles of computation for administration of drugs.

9312 Health Careers Chemistry (C, L) 3

Introduces students to basics of chemistry in a four-week module, including an introduction to basic concepts such as atoms and molecules and a description of solutions by different means, such as per cent by weight; also equilibrium systems with emphasis on acids and bases, and buffer systems.

9314 Basic Techniques for Ward Clerks (C, P) 6

Prepare non-professional workers with clerical and receptionist duties of the nursing unit under the supervision of the charge nurse on the unit.

9315 Arts and Practices for Nurse Aides And Orderlies (C, P) 6

Prepares nurses' aides and orderlies with skills necessary to perform selected activities under direct supervision of the professional nurse. These include care of the patient unit, personal care of the patient, vital signs, admission procedures, nutrition and patient safety, nursing in specific disease conditions, employment practices and procedures, and clinical experience.

9316 Food Preparation and Service for Diet Aides (C, P) 6

Provides basic instruction in safe food handling, health

practices and sanitation, stressing care and use of equipment and safety requirements. Students receive classroom instructions and on-the-job practice in basic skills in management of work and preparation and service of food in hospitals, nursing homes, homes for the aged, and child care centers.

9317 LPN Team Leadership (C) 3

Introduces Licensed Practical Nurse (LPN) to some basic concepts and skills of leadership which may be used in planning, implementing, directing, and evaluating the nursing care of patients.

9318 Child Health and Behavior (C) 2

Briefly covers normal changes in the health and actions of babies and children and will assist students in recognizing illness in children; teaches skills that are useful in caring for sick children, with special emphasis on when to call the doctor for a sick child and how to follow the doctor's instructions.

9319 Nurse Aide Procedures and Practicum 2 (C, P) 6

Prepares nurses' aides and homemakers with skills necessary to perform selected activities under direct supervision of the professional nurse, including care of the patient unit, personal care of the patient, vital signs, admissions procedures, nutrition, patient safety, nursing in specific disease conditions, employment practices and procedures and clinical experiences.

9320 Medical Ethics/Personal Health (C) 2

Presents ethics of medicine, professional conduct and personal habits expected of allied health workers.

9321 Medical Linguistics (C) 2

Presents the ethics of medicine, professional conduct and words from Greek and Latin prefixes, suffixes, word roots and combining forms; teaches students meanings of medical words through the Greek and Latin parts, correct spelling of terms, and intelligent use of medical dictionary.

9322 Biophysics for Health Occupations (C, L) 2

Prerequisites: 9306 and permission of the instructor

Presents practical application of principles of physics and mathematics to technical health occupations, with emphasis on principles underlying circuitry, optics, electromagnetic and other types of ionizing radiation; stresses problem solving specific to students' career fields.

9324 Arts and Practices for Nurse Aide/ Orderlies (C, P)	6	2611 Group Care of Children I (C, L)	3
Studies skills and attitudes needed by nurse aide/orderlies, providing knowledge of health care institutions and the health care team.		Covers role, duties and responsibilities of the child care center staff, the primary objectives, goals and responsibilities of a center; also, basic value structure, setting, organization and programming of child care facilities.	
9350 Medical Law and Ethics (C)	2	2612 Childhood Health (C, L)	3
Studies ethics of medicine and medical practice, stressing legal requirements and implications to medical professional and sub-professional practices.			
9353 Integrated Basic Science I (C)	4	2613 Orientation to Child Care Service (C)	3
Studies the human body as an integrated unit, including anatomy, physiology, medical terminology and application of physics, chemistry and microbiology; also an introduction to the study of common disease.		Acquaints students with basic principles involved in teaching the younger child, including working with parents and the role of the kindergarten and day care center.	
9354 Integrated Basic Science II (C)	4	2624 Child Care Participation I (C, P)	6
Continues Integrated Basic Science I (9353).			
9355 Medical Terminology (C)	2	2625 Legal Aspects of Child Care (C)	3
Teaches basic terminology required of paraprofessionals throughout the health occupation instruction in their allied health specialty areas.		Studies professional organizations, child care laws, licensure requirements and ethical and legal responsibilities of the child care team, with educational resources and in-service programs presented and related to the child care team.	
9356 Disease Conditions I (C)	3	2626 Science and Social Studies for Pre-School Children (C, L)	3
Presents basic concepts of disease, its causes, and the changes in body functions that occur, with special emphasis on functional disturbances, correlating patient symptoms to emergency and in-patient treatment.			
9357 Disease Conditions II (C)	3	2630 Recreational and Creative Activities For Children I (C, L)	3
Continues Disease Conditions I (9356).		Covers recreational and creative activities as they relate to influencing desired change in behavior in children, including analysis of play situations appropriate to the needs and abilities of 3-to-5 year-old children; includes instruction and practice in teaching and supervising games for the young child.	
9358 Pharmacology I (C)	3	2633 Community Resources (C)	3
Stresses classification of dosage of drugs and interactions and incompatibilities; also includes drug administration, weights and measurements and preparations, plus special precautions and legal aspects.		Helps students gain understanding of importance of good working relationships with adults, including parents, community leaders and members and employers; plus establishing connections for effective use of community resources.	
2610 Child Growth and Development— Birth to 6 Years (C)	4	2634 Child Care Participation II (C, P)	6
Introduces study of physical, social, emotional, and mental development of children from birth to 6 years of age, and considers influence of cultural environment on development and individual differences in development.		2637 Child Care Service I (C)	2
		2641 Childhood Movements and Creative Activities (C, L)	3
		2642 Menu Planning and Nutrition (C)	3
		2643 Preschool Art (C, L)	3
		Covers art materials and methods and techniques for providing art experiences for young children, with basic art skills developed from the vantage point of the child care staff member.	

Child Care

2610 Child Growth and Development— Birth to 6 Years (C)	4
Introduces study of physical, social, emotional, and mental development of children from birth to 6 years of age, and considers influence of cultural environment on development and individual differences in development.	

2645	Child Care Participation III	(C, P)	6	Medical Laboratory
2647	Child Care Service II	(C)	2	2811 Fundamentals of Laboratory Techniques (C, L) 6
2651	Language Arts for Children	(C)	3	Covers methods and techniques of encouraging development of language skills in preschool-age children.
2653	Business Principles	(C)	3	
	Includes introductory study and analysis of our business system as a whole in relation to our economic society, including introduction to business ownership, organization, principles, problems, management, control, facilities, administration and practices to develop an understanding of American business enterprises and their functions.			
2654	Child Care Participation IV	(C, P)	6	2813 Blood Bank Techniques (C, L) 3
2655	Bookkeeping	(C, L)	3	Studies principles and practice of laboratory techniques in blood bank.
	Introduces fundamental principles, techniques and tools of bookkeeping, with an understanding of the mechanics of accounting, collecting, summarizing, analyzing and reporting information about service enterprises; includes practical applications of the principles learned.			
2657	Child Care Service III	(C)	2	2814 Urinalysis Techniques (C, L) 3
2660	Preschool Music	(C, L)	3	Studies principles and practice of clinical laboratory techniques in the routine analysis of body fluids.
	Deals with basic skills needed for students who plan to work with preschool children in order to involve children in simple music activities, using simple instruments such as autoharp and rhythm instruments; presents singing, records and other materials for group activities, with participation in musical activities with the children in the laboratory as part of the program.			
2661	Management Techniques	(C)	4	2821 Blood Bank Applications (C, L) 3
	Presents principles of child care agency management, including theories and scope of the manager in relation to the personnel, business office, housekeeping and maintenance requirements of the agency.			
2663	Audio Visual Materials and Methods	(C, L)	3	<small>Co-requisite or Prerequisite: 2813</small>
	Introduces audio-visual materials, methods and techniques for use in group programs, with instruction provided on preparation and use of audio-visual materials and equipment.			
2665	Child Care Participation V	(C, P)	6	2822 Routine Analysis Applications (C, L) 3
2667	Child Care Service IV	(C)	2	Studies the clinical applications of routine analysis in the hospital laboratory.
2830	Chemistry Techniques	(C, L)	6	2830 Chemistry Techniques (C, L) 6
	Studies principles and practice of laboratory techniques of clinical chemistry.			
2831	Hematology Applications	(C, L)	8	2831 Hematology Applications (C, L) 8
	<small>Prerequisite: 2820</small>			
	Presents study and practice of the clinical applications of hematology in the hospital laboratory.			
2832	Serology Techniques	(C, L)	2	2832 Serology Techniques (C, L) 2
	Presents principles and practice of laboratory techniques of serology.			
2833	Bacteriology and Parasitology Techniques	(C, L)	4	2833 Bacteriology and Parasitology Techniques (C, L) 4
	Studies principles and practice of laboratory techniques in bacteriology and parasitology.			

2840 Chemistry Applications (C, L)	8	Co-requisite or Prerequisite: 2830 Practices clinical applications of chemical analysis in the clinical laboratory.
2841 Bacteriology and Parasitology Applications (C, L)	6	Co-requisite or Prerequisite: 2823 Presents study and practice of the clinical applications of bacteriology and parasitology in the hospital laboratory.
2842 Serology Applications (C, L)	2	Prerequisite: 2832 Presents study and practice in the clinical application of serology in the hospital laboratory.
2851 Chemistry for Medical Laboratory Technicians (C, L)	3	Presents principles and theory of general chemistry, including solutions, acids and bases, chemical kinetics and equilibria; also introduces organic chemistry and bio-chemistry principles.
2854 Medical Laboratory Techniques—Lecture I (C)	4	Prerequisites: 2821, 2831 and 2841 Presents principles and practices of advanced laboratory techniques in hematology, serology, immunohematology and routine analysis.
2855 Medical Laboratory Techniques—Laboratory I (L)	2	Prerequisite: 2854 Offers clinical practice in advanced laboratory techniques for medical laboratory technicians.
2860 Principles of Biochemistry (C)	3	Prerequisite: 2851 Studies structures in relationship to biological functions of cellular constituents, including carbohydrates, proteins, lipids, nucleic acids and enzymes, metabolic processes and control in the human body.
2863 Instrumentation (C, L)	4	Prerequisite: 2850 Presents instrumentation theory and practice as applied to electronic equipment and automated systems in the medical laboratory.
2864 Medical Laboratory Techniques—Lecture II (C)	4	Presents principles and practices of clinical bacteriology and chemistry including micro-biological chemical reactions, selective and differential media, clinical enzymes, biochemistry and blood gasses.
2865 Medical Laboratory Techniques—Laboratory II (L)	2	Continues Medical Laboratory Techniques—Laboratory I (2855).
2870 Pathology (C, L)	3	Prerequisite: 9351 Studies the body in disease using case studies, laboratory data and autopsy findings.
2873 Examination Review (C, L)	5	Views in depth major premises and theory in Clinical Laboratory Technology, stressing clinical test procedures and their alternatives as well as problem-solving techniques.
<i>NG</i>		
Dental Assistant		
3001 Introduction to Dental Practice (C)	2	Prerequisite: Permission of the program supervisor Presents the objective, qualification, responsibilities and scope of services of the dental assistant in practice, enabling students to analyze and improve themselves in terms of posture, figure control, personal hygiene, grooming and personal qualifications considered necessary for employment; also presents history and legal aspects involving various members of a dental health team; stresses nomenclature and terminology relevant to the field of dental assisting.
3003 Dental Materials and Laboratory I (C, L)	4	Prerequisite: Permission of the program supervisor Acquaints students with properties of dental materials, proper mode of manipulation, necessary armamentarium used, and technical duties dental assistants can perform; stresses clinical behavior of materials and covers certain biological considerations of importance to dental assistants.
3007 Preclinical Practice and Laboratory I (C, L)	5	Prerequisite: Permission of the program supervisor Introduces students to the dental operatory and responsibilities of the dental assistant: housekeeping duties, assisting the doctor, patient care, equipment and instrument identification, instrumentation, tray set-

ups, effective teamwork, 4-handed dentistry, operative dentistry and sterilization procedures; stresses practice sessions and terminology relevant to these subject areas.

3008 Dental Anatomy (C, L) 4

Prerequisite: 3007

Acquaints students with areas of oral anatomy, head and neck anatomy, basic embryology, histology, and tooth morphology as it relates to the dental field, with emphasis on Dental Assistants' need to understand material as assisting; also includes terminology relevant for effective communication; incorporates drawing and carving of teeth by students for development of dexterity in hands and fingers.

3010 Dental Materials and Laboratory II (C, L) 4

Continues Dental Materials and Laboratory I (3003).

3011 Preclinical Practice and Laboratory II (C, L) 5

Continues Preclinical Practice I, presenting anesthesia along with the following specialties: oral surgery, endodontics, periodontics, pedodontics, orthodontics, prosthodontics, and public health, with field trips to specialty offices for student observation. Students continue to practice all procedures learned in Preclinical Practice I and II on mannequins in the dental laboratory, with terminology relevant to subject areas presented.

3012 Microbiology and Oral Pathology (C, L) 4

Introduces basic concepts of microbiology presented with emphasis on oral microflora; presents pathogenic problems of oral cavity, emphasizing signs, symptoms and prognosis of disease processes; also consists of laboratory experiments allowing observation of organisms.

3013 Preventive Dentistry, Diet and Nutrition (C, L) 3

Prerequisites: 3001, 3008

Acquaints students with importance of preventive dentistry, showing how diet and nutrition play a part in it; presents techniques for good oral hygiene to be used in the dental office to assist patients in maintaining good oral hygiene and dental health.

3034 Dental Radiography (C, L) 5

Prerequisite: 3011

Gives instruction in basic principles of X-ray production, radiation sources, benefits, effects, control and hygiene; includes history, modern dental radiographic equipment and techniques, anatomical landmarks, dental films and processing done on and off manne-

quin's teeth; stresses avoiding errors in exposing and processing dental radiographs.

3038 Clinical Practice I (C, L) 3

Allows students to use skills and knowledge of dental materials, clinical procedures and manual skills practiced on a mannequin as learned in 3007 and 3011, and in 3003 and 3010; skills will be practiced in a simulated office situation using live patients.

3039 Dental Office Management (C, L) 4

Prerequisite: 3011

Presents principles of administrative planning, book-keeping, filing, recall programs, banking, tax records, basic written communications, insurance office practice and management as related to the dental office; stresses techniques of appointment control, records, credit and payment plans.

3043 First Aid and Pharmacology (C, L) 3

Prerequisite: 3038

Presents lectures and demonstrations concerning emergencies in the dental office, with treatment and prevention; also presents pharmacology as it applies to dentistry and the dental assistant's role, familiarizing students with origin, effects, use and dosage of common drugs used in dentistry. Also includes prescription writing, metric system and state and dental profession safety precautions required in the use of medicaments; provides practice in determining vital signs and performing cardiopulmonary resuscitation and emergency cardiac care in accordance with standards of the American Heart Association.

3044 Clinical Practice II (C, P) 11

Provides practical chairside dental assisting experience gained from private dental practices in general and specialty areas of dentistry, with weekly seminars included as integral part of the learning experience.

yes

Emergency Care Technician

3215 Orientation to Emergency Medical Services (C) 5

Acquaints students with basic principles of nursing and emergency medical care in practice, including familiarization of hospital environment, enabling students to become accustomed to performing basic procedures smoothly, without embarrassment or inconvenience to the patient.

3216 Clinical Experience (AMB) 1 (C, P)	3	
Presents observation and application of basic emergency care techniques in approved emergency service vehicle.		
3217 Emergency Care Techniques I (C)	4	
Presents theory, recognition and emergency care of shock victims, including anatomical structure of the respiratory system; auscultation and percussion of chest sounds, rapid clinical assessment of the chest.		
3219 Basic Emergency Medical Technicians—Ambulance Techniques (C, L)	5	
Provides development of basic principles of emergency care in ambulance operation, including skills development, pulmonary depression and arrest, cardiac arrest, bleeding and shock, and management of acute medical and psychiatric problems. Presents principles of emergency care of wounds, burns and environmental injuries, and related orthopaedic injuries and sterile techniques. Students completing this course successfully are eligible to take a certification test prepared by the Indiana Emergency Medical Services Commission.		
3221 Basic Cardiology (C)	4	
Provides for recognition of basic cardiology system, including instruction in cardio-physiology, pathology, electrocardiography and basic principles of cardiac monitoring.		
3224 Advanced Cardiology (C)	4	
Prerequisite: 3221		
Includes electrocardiology with emphasis on arrhythmias and myocardial infarction, interpretation of EKG and arrhythmia, correlating patient symptoms and treatment; also includes monitors and defibrillators with understanding of operations and electronics, a therapeutic approach to coronary systems, complications, shock, drugs and treatment; highlights cardiovascular medications.		
3225 Emergency Care Techniques II (C)	5	
Treats medical emergencies of the general population, including care of the unconscious patient, hypertension, diabetes and seizures, also emergency techniques for care of traumatic emergencies.		
3228 Medical/Surgical Techniques I (C, L)	3	
Prerequisite: 3215		
Develops specifically for the ECT student basic principles of sterile technique in relationship to the pre-operative and post-operative care of the patient, including an orientation to an ideal situation, adaption to basic principles, patient positioning and transportation; an understanding of basic concepts of anesthesiology;		
principles and skill in handling drapes, care of contaminated cases; understanding of explosion hazards and prevention of infection; processing and preparation of nondisposable items. Also covers principles of sterilization, instrument identification, suture and needle use; care of surgical specimens; importance of accurate record keeping, surgical preps and skill in hand scrubbing, gowing and gloving procedures.		
3233 Pharmacology II (C)	3	
Prerequisite: 3223		
Acquaints students with administration of drugs and includes instruction in scope of pharmacology, classification of drugs, dosage forms, preparation, methods of administration, interactions and incompatibilities; stresses use of drugs and medications as related to emergency care in practice.		
3235 Medical/Surgical Techniques II (C, L)	3	
Prerequisite: 3228		
Continues Medical/Surgical Techniques (3228).		
3236 Clinical Experience II (C, P)	5	
Prerequisite: 3228		
Enables students to correlate principles and concepts presented in classroom to emergency care in practice through clinical experience in cooperating hospitals; includes 50 hours in emergency room, 30 hours in cardiac care unit, 10 hours in obstetrics, including prepartum, postpartum, delivery and recovery, and 40 hours in orthopedics.		
3242 Clinical Experience III (C, P)	9	
Prerequisite: 3235		
Enables students to correlate principles and concepts presented in classroom to emergency care in practice through situational review; includes closely supervised observation and assistance in emergency departments, intensive care units and operating rooms of cooperating hospitals.		
3243 Seminar in Techniques (C)	3	
Co-requisite: 3242		
Presents case studies in emergency care situations, including correlation of concurrent Clinical Experience III (3242).		
3244 Practicum (P)	5	
Provides experience in selected clinical procedures under direct supervision of a physician. (required for EMT-2; arranged by permission of instructor)		
3246 Practicum in Emergency Care (P)	12	
Provides experience in selected clinical procedures under direct supervision of a physician. (required for EMT-11; arranged by permission of instructor)		

3247 Basic EMT Refresher Course (C) 2		
Prerequisite: 3219		
Presents basic theory and laboratory practice necessary to up-date emergency medical technician-ambulance skills.		
3248 Basic Life Support Concepts and Skills (C) 3		
Provides knowledge for security personnel, hospital employees, allied health workers, business office personnel and interested persons in industry to render immediate care at site of accident or medical problem until professional emergency medical technicians arrive and transport victim to medical facility.		
<i>Some</i>		
Culinary Arts		
3412 Introduction to Volume Food Preparation (C, L) 5		
Presents fundamentals of cooking applying to all food preparation and requisite to progress in the cooking field; includes personal hygiene, sanitation and safety, basic menu writing and balancing meals; also knowledge needed for progressive steps in preparing completed meals.		
3414 Introduction to Volume Food Service (C, L) 3		
Presents steps taken in getting completed meal to customer in fastest and best manner while still retaining quality; includes various types of table setups and service—American, French, Russian, etc.; stresses waiter training, busing, cleaning and resetting of dining room, kitchen cleanup, dishwashing and sanitation, and proper storage of all portable equipment.		
3421 Nutrition (C) 4		
Presents determination of individual requirements of energy, protein, mineral and vitamins, foods as source of daily requirements and relationship between food and nutrition and optimal physical fitness.		
3422 Volume Food Preparation (C, L) 5		
Introduces methods of preparing foods in volume for large feeding operations, equations for raising or lowering recipes, mathematics used to determine proportion costs to determine profitable selling price; also includes preparation of volume foods, methods of retaining top quality in prepared foods until dispersement, timing of activities to have products ready just prior to service and limitation of menu items in this type of food service.		
3424 Volume Food Service (C, L) 3		
Presents methods used to dispense volume foods, cafeteria table service, wagon service, in-plant feeding, sanitation and cleanup procedures necessitated by volume feeding.		
3432 Food and Beverage Management and Services (C) 3		
Covers entire food and beverage operations from purchasing, receiving and storage to preparation and service.		
3433 Food Production Principles (C) 3		
3434 Institutional Food Preparation (C, L) 5		
Covers food preparation for institutions such as colleges, universities, hospitals, factories, nursing homes, etc. feeding on large scale with multiple choice menus; includes figuring total food preparation predicted on highest possible number of customers and reducing this by percentage figures from same time previous month and previous year, percentage of popularity of each item from same records, effect of weather on sales and marketing for good sales potential of available food and meals based on popularity of the items; multiple entrees meals are prepared based on above method.		
3435 Institutional Foods Service (C, L) 3		
Covers cafeteria and dining room service, cart service, prepared tray service and portable hot cart service; includes cleanup and sanitation entailed in above methods.		
3441 Food Beverage Purchasing and Service (C) 3		
Studies in detail the major groups of food purchased by quantity buyers, including fresh fruits and vegetables, processed fruits and vegetables, dairy products, cereals and cereal products, beverages, poultry and eggs, fish and shellfish, meats and alcoholic beverages.		
3443 Gourmet Food Preparation (C, L) 6		
Studies transition from volume food preparation to gourmet foods, with preparation of highest quality food and most challenging; students take turns leading operations in gourmet preparation of smaller of individual dish preparation; also includes marketing, menu writing, recipe research and methods; preparation and potentials for showmanship.		

Dietary Assistant

3607 Nutrition and Diet Therapy (C, L) 5

Presents to food services employees or prospective employees of health care institutions knowledge about basic nutrition, therapeutic diets and menu planning; students use knowledge by writing menus.

3608 Dietary Management I (C, L) 5

Includes concepts of management, cost control, storage, feeding in emergencies, sanitation and safety in format designed for food service employees or prospective employees of health care institutions.

3609 Dietary Management II (C, L) 5

Includes specifications, storage, purchasing and preparation of food, recipe standardization, kitchen designs and delivery systems in format designed for food service employees or prospective employees of health care institutions.

3610 Nutrition (C) 2

Introduces students to terminology used in nutrition, the nutrients, foods which are excellent sources of nutrients, the basic four and menu planning.

3611 Diet Therapy (C) 3

Introduces principles of menu planning for therapeutic diets, medical terminology necessary to obtain information from patient care plans and State Board of Health requirements relative to therapeutic diets.

3612 Nutrition and Diet Therapy Practicum 1 (P)

Involves writing of general menus and therapeutic modification of general diets, with students attending patient care conferences and writing dietary section of patient care plans.

3613 Personnel Management (C) 2

Involves preparation of management tools, communication techniques, labor laws, kitchen layouts and emergency feeding.

3614 Personnel Management Practicum (P) 1

Involves use of management tools such as time schedules, organizational charts, job analysis and job descriptions, with students conducting employee interviews and training sessions.

3615 Sanitation (C) 2

Deals with sanitation and OSHA regulations as they apply to a dietary department.

3616 Sanitation Practicum (P) 1

Involves evaluation by students of sanitary aspects of

their dietary department and OSHA regulations, and written recommendations for improvement.

3617 Cost Control (C) 2

Discusses purchasing and cost control as applied to a dietary department; also introduces food specifications, factors which affect the food market, labeling of food, convenience foods and inventories.

3618 Cost Control Practicum (P) 1

Involves determination by students of cost of food, non-food supplies and labor; also includes ordering of food and supplies after evaluation by reading labels.

3619 Food Preparation (C, L) 2

Involves discussions of food preparation techniques followed by preparation of food using various techniques discussed; includes standardized recipes, the metric system and types of tray service.

Medical Assistant

3712 Medical Office Procedures Clinical I 4-6 (C, L)

Presents patient preparation for routine examinations in physician's office, including assisting with physical examinations, taking and recording vital signs, understanding principles of general nutrition, caring and preparing sterile equipment and ordering supplies.

3713 Medical Office Bookkeeping (C, L) 4

Introduces Basic principles of bookkeeping as used primarily in medical office settings, including principles of debit and credit, double entry bookkeeping, use of journals (particularly combined cost journals) and analyzing transactions.

3721 Medical Office Procedures, Administrative (C, L) 4

Prerequisites: 1212, 3713

Co-requisite: 3712

Provides basic understanding of secretarial and bookkeeping duties and responsibilities pertinent to medical offices and health care agencies, including medical correspondence and records, insurance forms, case histories of patients, filing, financial administration, correct contact procedures with patients, hospitals and professional agencies.

3722 Medical Typewriting I (C, L) 3

Prerequisites: 1212, 9355

Improves production typewriting ability in the medical field, with emphasis on articles, medical forms, case

histories and correspondence using medical terminology.

3723 Medical Typing I (C, L) 2

Prerequisites: 1212, 3740, 9355

Improves production typewriting ability in the medical field, with emphasis on articles, medical forms, case histories and correspondence utilizing medical terminology.

3730 Medical Assistant Laboratory Techniques (C,L) 4

Introduces students to various laboratory and x-ray procedures, with emphasis on preparation of patients for various procedures, their purposes and expected norms of results, with students expected to be able to demonstrate proficiency in collection and/or preparation of specimens, including urine, blood, biopsies, Pap smears, and cultures and their respective preservatives for deliverance to the proper laboratories at completion of course.

3731 Medical Assistant Clinical Experience I (L) 4-5

Prerequisites: 3712, 3741

Provides opportunity to perform various administrative procedures under supervision, with learning experiences obtained in selected physician's offices, clinics and hospitals.

3732 Medical Office Communications (C, L) 4

Studies communications skills development directed toward medical office, with emphasis on human relations.

3733 Medical Typewriting II (C, L) 3

Prerequisites: 3723, 9355

Continues 3722 with emphasis on development of speed and accuracy.

3734 Medical Assistant Laboratory Techniques I (C, L) 2

Introduces various laboratory and x-ray procedures with emphasis on preparation of patient for various procedures, their purposes and expected norms of results; aims for proficiency in collection and preparation of specimens, such as urine, blood, biopsies, Pap smears, and cultures and their respective preservatives for deliverance to the proper laboratories.

3735 Medical Assistant Laboratory Techniques II (C, L) 3

Prerequisites: 3730, 3731

Continues 3730 and 3731; includes tests that might be done in a physician's office, such as urinalysis, gram stains, pregnancy tests, blood counts,

sedimentation rates, etc.; students will also learn to communicate proper preparation for x-rays to patients, identify safety hazards and precautionary measures relevant to x-ray equipment.

3736 Medical Law (C) 2

Stresses legal requirements and implications to medical professional and subprofessional practices; introduces medical law for understanding of legal relationship of the physician and patient, creation and termination of contracts, professional liability, malpractice, tort liability, breach of contract, and the Medical Practice Acts.

3737 Medical Ethics (C) 2

Studies ethics of medicine and medical practice, with emphasis on professional attitudes and behavior and fundamentals of meeting special needs of patients; presents brief introduction to history of medicine, including great men of medicine and their contributions to develop kinship and pride in the medical profession.

3738 Written Communications (C, L) 2

See description of 3732.

3740 Medical Linguistics II (C) 2

Prerequisite: 9355

Continues 9355 with Greek and Latin prefixes, suffixes, word roots and combining forms, including meanings of medical words through Greek and Latin parts and correct spelling of these terms; studies urinary, endocrine, reproductive, respiratory, nervous and sensory systems as well as medical terms in proper relationship to the anatomy of the body and related disease, anomalies and surgeries.

3741 Medical Office Procedures—Clinical II (C, L) 4-6

Expands 3712, with special emphasis on principles and procedures as they relate to office practice, including assisting in minor surgery, physical therapy, diathermy and electrocardiograms.

3743 Machine Transcription—Medical I (C,L) 3

Prerequisite: 3722

Presents fundamentals of medical dictation and machine transcription; includes typing medical reports, medical terminology, and medical correspondence, with students expected to demonstrate proficiency in typing and terminology involved in medical materials.

3744 Machine Transcription—Medical II (C, L) 2

Prerequisites: 1212, 3722, 3723, 3733, 9355, 3740

Presents fundamentals of medical dictation and

machine transcription; includes typing medical reports, medical terminology and medical correspondence, with students expected to demonstrate proficiency in typing and terminology involved in medical materials.

**3750 Medical Office Procedures—
Clinical III (C, L) 4-5**

Prerequisites: 3712, 3741

Emphasizes principles and procedures as they relate to office practice, including diagnostic procedures, math of pharmacology, care of stock medications and drug samples, care of instruments, knowledge of therapeutic diets.

**3751 Machine Transcription—
Medical II (C, L, P) 3**

Continues 3743, with emphasis on case studies and reports.

3753 Drugs and Solutions (C) 2

Familiarizes hygiene students with basic aspects relating to physical and chemical properties, dosage, methods of administration, and therapeutic use of pharmaceutical preparations used in medical office.

3761 Community Health (C) 2

Studies health services in the community, including preventive services, institutional components of health care systems, financing health care and manpower; also general issues of quality environment, pollution control and population control, and planning research and health problems as issues of public policy.

3763 Medical Office Management (C) 3

Supplies background for organization and management of a physician's office and an in-depth study of government types of health insurance coverage.

3764 Payroll and Taxes (C,L) 3

Develops skills in federal and state withholding tax procedures, with students learning to prepare periodic statements and withholding and income tax returns; also includes study of payroll systems as applied to the medical office.

3765 Medical Insurance (C) 2

Provides overview of medical insurance programs, with skills developed in handling insurance forms and reports as applied to the medical office.

**3766 Advanced American Red Cross
First Aid and Emergency Care (C, L) 3**

Teaches students to be able to recognize emergency situations, know the proper course of action with different types of emergencies, and apply first aid techniques if necessary.

3768 Comprehensive Certification Review (C) 3

Prepares for the certification test.

**3769 Medical Assistant Administrative
Externship (C, P) 4**

Provides opportunity through clinical experience for students to perform various administrative procedures under supervision.

Indpls

Operating Room Technician

4210 Surgical Anatomy I (C) 5

Studies anatomy and physiology of the human body as an integrated unit by dividing the body into its basic systems and then correlating the system with specific surgical procedures; emphasizes structure specific to the operating room; includes body as a whole, the skin, general survey, skeletal, muscular, cardiovascular, lymphatic and respiratory systems.

4211 Operating Room Techniques I (C, L) 9

Presents basic principles of sterile technique in relationship to the pre-operative, operative and post-operative care of the patient, including orientation to an ideal situation, adoption of basic principles, patient positioning and transportation, the understanding of basic concepts of anesthesiology, principles and skill in handling drapes, care of contaminated cases, understanding of explosion hazards and prevention of infections, processing and preparation of nondisposable items, principles of sterilization, instrument identification, suture and needle use, care of surgical specimens, importance of accurate record keeping, surgical preps and skill in hand scrubbing and gowning and gloving procedures.

**4213 Microbiology for Operating Room
Technicians (C, L) 3**

Presents basic background in study of microbes, microbial pathogens, methods of studying microbes, and microbial destruction, knowledge of microbiology in correlation with operating room technician in the operating room, the obstetrical unit and the emergency room.

4220 Surgical Anatomy II (C) 3

Studies the human body as whole or integrated unit correlating the systems of the body with specific surgical procedures including digestive, urinary, nervous, reproductive and endocrine systems, with techniques if necessary.

4221 Surgical Procedures I (C)	5	Studies basic surgical procedures in relation to the total physiological aspects of surgical interaction, including a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedure and a review of the total patient including typical patient, diagnostic tests and immediate post-operative care.	procedures and capacity to function under adverse conditions that threaten a patient's well-being.
4222 Clinical Applications I (P)	8	Enables operating room technician students to correlate basic principles and concepts of classroom lecture to working situation through clinical experience; includes scrubbing and circulating on selected major and minor operations, observing and assisting with selected diagnostic procedures and observing and assisting with procedures in obstetrics and emergency room.	
4223 Operating Room Techniques II (L)	3	Concerns practical application of aseptic technique, with role playing used to help students in experiences applying all phases of aseptic technique and learning step-by-step procedures for typical general surgery operations.	
4230 Surgical Procedures II (C)	5	Studies advanced and specialized surgical procedures in relation to the total physiological aspects of surgical interaction, including a concept of the involved anatomy, existing pathology, surgical hazards encountered, surgical procedures and review of total patient including typical patient, diagnostic tests and immediate post-operative care.	
4321 Clinical Applications II (P)	10	Continues Clinical Applications I (4222).	
4232 Obstetrical Techniques (C)	3	Affords the operating room technician students a basic understanding of the effect of pregnancy anatomically, physiologically, and psychologically on the obstetric patient; allows operating room technician students to function in the obstetrical unit and in the operating room on obstetrical cases with a basic understanding of obstetrics.	
4240 Clinical Applications III (P)	10	Continues Clinical Applications II (4321).	
4241 Emergency Room Techniques (C)	2	Gives operating room technician students basic understanding of psychological and physiological effect of trauma on the emergency patient; provides basic knowledge of emergency conditions, emergency	
4242 Surgical Procedures III (C)	5	Studies specialized procedures in neurosurgery, cardiovascular surgery and chest surgery; stresses pertinent anatomy and pathology as well as diagnostic tests and immediate post-operative care.	
4244 Operating Room Medical Terminology (C)	2	Review medical terminology pertinent to the operating room, with emphasis on root forms, prefixes and suffixes and word-building techniques.	

No

Practical Nursing

4409 Basic Science for PN I (C)	4	Prerequisite: Admission to the Practical Nursing Program
Introduces the general body plan, the relationship of micro-organisms and disease conditions, symptoms, diagnostic tests, nursing measures and medical terminology as related to the body as a whole, and integumentary, musculoskeletal, cardiovascular and digestive systems.		
4410 Basic Science for PN II (C)	4	Introduces the relationship of microorganisms and disease conditions, symptoms and diagnostic tests, nursing measures and medical terminology as related to special senses and the nervous system.
4411 Nursing Techniques and Care I (C, L)	3	Prerequisite: Admission to the Practical Nursing Program
Studies principles that guide nursing action, equipment and supplies which complete a patient's unit, preparation of a patient unit using good body mechanics, and protective measures for patients and components of personal hygiene.		
4420 Nursing Techniques and Care II (C, L)	3	Prerequisite: 4411
Introduces students to essentials of good communication, methods used in physical examination, including correct procedures in measuring temperature, pulse, respiration and blood pressure; discusses reporting and recording of pertinent information using correct medical terminology, with emphasis on reporting abnormal findings to the registered nurse (RN) or team leader.		

4421 Medical Surgical Nursing I (C)	4
Prerequisites:	4409, 4410,
	4411, 4420, 4430, 4443,
	4450

Co-requisite: 4423

Studies nursing care of adults, including etiology, pathophysiology, symptoms, diagnostic tests and nursing measures for specific disease conditions; also, measures to prevent illness as well as management of disease through use of therapeutic agents; discusses management of pre- and post-operative care of surgical patients and diabetics and conditions related to the cardiovascular system.

4422 Nutrition and Diet Therapy (C)	2
Prerequisites:	4409, 4410,
	4411, 4420, 4430, 4443,
	4450

Introduces basic principles of nutrition and diet therapy, including dietary allowances for various age groups, and socioeconomic, ethnic and religious food preferences.

4423 Medical Surgical Clinical Nursing I (C, L)	3
Prerequisites:	4409, 4410, 4411,
	4420, 4430, 4443, 4450

Co-requisite: 4421

Provides students with medical-surgical-clinical experiences, with emphasis on pre-post operative care, diabetic patients and those with impaired cardiovascular function; provides students with opportunity to perform nursing skills relative to Nursing Techniques and Care I and II and selected skills from Nursing Techniques and Care III and IV.

4430 Nursing Techniques and Care III (C, L)	3
Prerequisite:	4411

Studies regulation of food and fluid intake and elimination from GU and GI tract, with students taught to perform simple analysis on specimens, plus the importance of reporting abnormal findings to the RN; introduces writing of nursing care plans in non-complex situations.

4431 Medical Surgical Nursing II (C)	4
Prerequisites:	4409, 4410,
	4411, 4420, 4430, 4443,
	4450, 4421, 4423

Co-requisite: 4432

Studies nursing care of adults, including etiology, pathophysiology, symptoms, diagnostic test and nursing measures for specific disease conditions; discusses measures to prevent illness, management of disease through thyroid gland, and pulmonary function.

4432 Medical Surgical Clinical Nursing II (C, L)	3
Prerequisites:	4409, 4410,
	4411, 4420, 4430, 4443,

4450, 4423, 4431

Co-requisite: 4431

Provides students with medical-surgical-clinical experience, including care of patients with impaired gastrointestinal, thyroid and pulmonary function, provides further developmental skills relative to prerequisite courses.

4440 Maternal Health Nursing (C)	3
Prerequisites:	4409, 4410,
	4411, 4420, 4430, 4443,
	4450, 4421, 4431, 4444,
	4451, 4423, 4432, 4445,
	4452, 4446, 4422

Co-requisite: 4442

Provides students with information to meet needs of both mother and infant through understanding maternity cycle and growth and development of newborns.

4441 Personal Vocational Relations (C)	2
Correlates with specific activities of students; deals with human behavior; hospital organization, legalities of nursing, nursing organizations and employment for the Licensed Practical Nurse (LPN).	

4442 Maternal Health Clinical Nursing (C, L)	4
Prerequisites:	4409, 4410,
	4411, 4420, 4430, 4443,
	4450, 4421, 4431, 4444,
	4451, 4423, 4432, 4445,
	4452, 4446, 4422

Co-requisite: 4440

Provides students maternal nursing experience, including caring for mothers in labor, delivery, and on the postpartal unit, as well as caring for the newborn.

4443 Nursing Techniques and Care IV (C, L)	3
Prerequisite:	4430

Introduces students to some techniques used in administration of therapeutic agents; discusses role of LPN and RN in relation to the administration of therapeutic agents as well as initiation of therapeutic action.

4444 Medical Surgical Nursing III (C)	4
Prerequisites:	4409, 4410,
	4411, 4420, 4430, 4443,
	4450, 4421, 4431, 4423,
	4432

Co-requisite: 4445

Studies nursing care of adults, including study of etiology, pathophysiology, symptoms, diagnostic test and nursing measures for specific disease conditions;

studies measures to prevent illness, management of disease through use of therapeutic agents, and conditions related to musculoskeletal, urinary and reproductive function.

4445 Medical Surgical Clinical Nursing III (C, L) 4

Prerequisites: 4409, 4410,
4411, 4420, 4430, 4443,
4450, 4421, 4431, 4423,
4432, 4422

Co-requisite: 4444

Provides students medical-surgical clinical experience, introducing use of therapeutic diets in treatment of illness; includes care of patients with impaired musculoskeletal, urinary and reproductive function.

4446 Community Health Resources (C) 2

Prerequisites: 4409, 4410,
4411, 4420, 4430, 4443,
4450, 4421, 4431, 4423,
4432

Explores community health concerns and community agencies; includes guests from community agencies and field trips.

4450 Nursing Techniques and Care V (C, L) 3

Prerequisite: 4443

Identifies physical, emotional and spiritual needs of aging, long term, chronically and terminally ill patients, role of clergymen and religious practices as they relate to health care, and introduces techniques used in preventing the spread of communicable disease.

4451 Medical Surgical Nursing IV (C) 3

Prerequisites: 4409, 4410,
4411, 4420, 4430, 4443,
4450, 4421, 4431, 4444,
4423, 4432, 4445

Co-requisite: 4452

Studies nursing care of adults, including etiology, pathophysiology, symptoms, diagnostic test and nursing measures for specific disease conditions; emphasizes measures to prevent illness, management of disease through use of therapeutic agents; discusses conditions related to neurological, integumentary, vision and hearing functions.

4452 Medical Surgical Clinical Nursing IV (P) 3

Prerequisites: 4409, 4410,
4411, 4420, 4430, 4443,
4450, 4421, 4431, 4444,
4423, 4432, 4445, 4422

Co-requisite: 4451

Provides students medical-surgical clinical experience including implementation of community resources in discharge planning; emphasizes care of patients with

neurological, integumentary, vision and hearing impairments.

4453 Pediatric Nursing (C) 3

Prerequisites: 4409, 4410,
4411, 4420, 4430, 4443,
4450, 4421, 4431, 4441,
4423, 4432, 4445, 4422,
4446

Co-requisite: 4454

Provides students basis from which to care for patients from infancy through adolescence in both health and illness.

4454 Pediatric Clinical Nursing (P) 3

Prerequisites: 4409, 4410,
4450, 4421, 4431, 4441,
4423, 4432, 4445, 4422,
4446

Co-requisite: 4453

Provides students opportunity to care for selected pediatric patients, with development of patient considered as well as nursing care.



Radiologic Technician

4609 Nursing Procedures for X-Ray Technicians (C, L) 2

Presents techniques of basic nursing care provided by radiologic technologists, including patient-technician relationships, principles of asepsis and isolation and basic first aid.

4613 Radiation Physics I (C) 3

Introduces physics used in production of X-rays, including basic laws of physics related to atomic structure, chemical properties and reactions and electrical circuitry; studies equipment and methods of operation and measurement of electricity.

4619 Orientation to X-Ray Technology (C, L) 6

Presents and discusses historic development of X-ray technology and role and function of the radiologic technologist; basic principles of radiography, including X-ray generation, components of the X-ray tube, properties of radiation, film processing equipment and intensifying screens; accessories pertinent to production of quality radiographs; provides terminology and introductory techniques of positioning of the chest and upper extremities, and stresses procedures and practices of radiation protection.

4622 Radiation Physics II (C)	3	
Presents correlation of basic laws and principles of physics and radiation circuitry, X-ray production, measuring devices and units, photo-electric effect; studies equipment utilized in X-ray production and monitoring.		
4656 Departmental Administration (C)	3	
Discusses legal bases for operation of radiology departments, including factors impinging on control and operation; also includes classification, staffing patterns and interrelationships of radiology department personnel, methods of development and maintenance of departmental records, schedules and filing systems.		
4657 Clinical Theory IV (C)	3	
Correlates didactic instruction to clinical practice emphasizing production of quality radiographs of mastoids, sinuses and petrous portion of the temporal bones, sternum, ribs and soft tissues of the chest.		
4658 X-Ray Clinical Education IV (P)	3	
Consists of indirectly supervised clinical practice in affiliating hospitals, with application of classroom theory, including reinforcing instruction in anatomy and positioning techniques in the production of quality radiographs.		
4659 Introduction to Radiation Therapy and Nuclear Medicine (C)	2	
Provides students with introduction to principles, laws, equipment, techniques of radiation therapy and nuclear medicine, also presenting application to disease conditions and treatment.		
4662 Special Procedures II (C)	3	
Introduces and discusses equipment used in special radiographic procedures, including advanced special procedures in neuroradiography, angiography, male and female reproductive systems, as well as retroperitoneal pneumography, sialography, sinus tract injection, bronchography, arthrography, and scanography; also reviews anatomy and terminology of the procedures, stressing contrast media, equipment, procedural methods and positioning.		
4666 Clinical Theory V (C)	3	
Consists of positioning techniques lecture and demonstration correlating Special Procedures III (4671), with stress on lectures in anatomy and terminology and production of quality radiographs in neuroradiography, angiography, reproductive system radiography, arthrography, sialography and bronchography.		
4667 X-Ray Clinical Education V (P)	3	
Continues indirectly supervised clinical practice and application of classroom theory in affiliating hospitals.		
4671 Special Procedures III (C)	2	
Introduces concepts and procedures of specialized techniques, foreign body localization, magnification radiography, subtraction technique, thermography, ultrasonography, and Xero-radiography. Presents dental radiography and specific patient and procedural techniques relating to pediatrics and geriatrics; reviews anatomy and terminology relative to the procedures, with stress on contrast media equipment and procedural methods and positioning.		
4676 Clinical Theory VI (C)	3	
Presents lecture and demonstration as well as student laboratory projects in the production of quality radiographs in special procedures.		
4677 X-Ray Clinical Education VI (P)	3	
Continues indirectly supervised clinical practice and application of classroom theory in affiliating hospitals.		
4681 Equipment Maintenance (C)	2	
Presents fundamentals of preventive maintenance of X-ray equipment and discusses problem solving procedures, common malfunctions and corrective measures relative to technician responsibilities.		
4685 General Examination Review (C)	4	
Presents a comprehensive review of the fundamentals of radiologic technology essential to performance and preparatory for examination by the American Registry of Radiologic Technologists.		
4686 Clinical Theory VII (C)	3	
Consists of students initiating and presenting projects related to radiologic technology, with projects at the discretion of the instructor.		
4687 X-Ray Clinical Education VII (P)	3	
Continues indirectly supervised clinical practice and application of classroom theory in affiliating hospitals.		
4697 Seminar for Radiologic Technologists (C)	1	
Presents concepts necessary for professional development for advanced radiologic technology students.		

137 **Respiratory Therapy**

4810 Basic Science (C)

4

Studies the fundamentals and principles of chemistry, physics and mathematics related to respiratory therapy, introducing English and metric measuring systems and symbol systems; stresses general gas laws related to gas transport.

4812 Respiratory Therapy Science I (C, L) 6

Gives brief history of the respiratory therapy and acquaints students with principles and practices of oxygen administration, humidity and aerosol therapy, with emphasis on safety and equipment.

4813 Nursing Techniques (C, L) 2-3

Includes patient needs, asepsis, vital signs, isolation techniques and charting.

4820 Cardiopulmonary Physiology (C) 4

Prerequisite: 4812

Studies cardiopulmonary system in depth with emphasis on airway management.

4821 Respiratory Therapy Science II (C, L) 6

Acquaints students with principles of practices of mechanical respirators, airway management, chest physiotherapy, and pharmacology applied to respiratory therapy.

4822 Respiratory Therapy Applications I (C, L) 5

Prerequisite: 4812

Studies various applications of respiratory therapy by observation, with students rotated through various clinical areas.

4823 Clinical Practicum I (L, P) 4

Prerequisite: 4812

Consists of students developing skills and knowledge by performing the various respiratory therapy tasks in clinical areas under supervision.

4830 Laboratory Data (C, L) 3

Prerequisite: 4812

Co-requisites: 4820, 4821,
4831

Provides students with understanding of techniques for sputum collection, lung function testing and blood gas analysis.

4831 Clinical Medicine (L) 4

Introduces etiology, symptomology, diagnosis, therapeutics and prognosis of disease conditions related to respiratory therapy.

4832 Respiratory Therapy Applications II (C, L)

5

Continues Clinical Practicum I (4823).

4833 Clinical Practicum II (P) 6-8

Continues Clinical Practicum I (4823).

4835 Respiratory Therapy Science III (C, L) 6

Introduces practice of critical respiratory care, both of adults and infants; students study volume, ventilators, pediatric ventilators and care of patients receiving mechanical ventilation.

4837 Pulmonary Pathophysiology (C)

4

Introduces etiology, symptomology, diagnosis, therapeutics and prognosis of disease conditions related to respiratory therapy.

4841 Clinical Practicum III (P)

11-13

Continues Clinical Practicum II (4833).

4844 Cardiopulmonary Laboratory Diagnosis (C)

4

Prerequisite: 4837

Introduces the function of the cardiopulmonary laboratory, giving students understanding of basic pulmonary function tests and techniques; includes electrocardiography and basic cardiac arrhythmias.

4845 Seminar (C)

2

Co-requisite: 4839

Allows students to prepare and present in-depth case studies and reports from current literature to the faculty and peers.

Trade and Technical Course Descriptions

Study 6

Agricultural Equipment

5113 Principles of Internal Combustion Engines (C)

Studies fundamentals of internal combustion engines, including 2 and 4-cycle engine theory, magnets, battery and thermal ignition, carburetors, fuel pumps, cooling and lubrication systems; also preventive maintenance and safety.

5114 Direct Current Fundamentals (6-12-24) (C) 2

Deals with electrical functions of all 3 fueled engines as related to starting, storage, charging, lighting and ignition components; also controlling and protective devices and safety precautions.

5115 Hydraulic Fundamentals (C) 2

Studies the physical property of fluids and their control, the basic components of valves, pumps, cylinders, conduction, accumulators and cylinders, and multiplication of forces.

5116 Tractor Engines (C, L) 3

Studies basic components and their purpose, including flywheel, crankshaft, cam shaft, connecting rod, piston, head-cylinder block, sleeves, water pump, oil lubrication pump, carburetor, fuel pump, distributor drive, governor and radiator design and purpose, as compared to diesel engines; also students will disassemble and assemble laboratory gasoline engines as means of comparison with diesel engines.

5123 Diesel Engines I (C, L) 3

Deals with intake and exhaust systems of agricultural and industrial diesels, including fuel delivery systems and theory of thermal ignition; fuel, air and lubrication filtration and preventive maintenance required for each component; also, students will disassemble and assemble laboratory diesel engines as a means of comparison with gasoline and L-P engines.

5124 Manual Transmissions (C, L) 3

Studies sliding gear transmissions and related components of the power train, including clutches, differentials, final drives and power take off mechanisms as well as manual steering and brakes; also includes collar shift and synchromesh transmissions.

5125 Open Center Hydraulic Systems (C, L) 3

Studies hydraulic system used on older tractors and today's smaller tractors and machinery, including gear and vane type pumps, spool and rotary valves, flow dividers, relief valves, single and double action cylinders, simple low horsepower hydraulic motors and preventive maintenance and safety.

5126 Closed Center Hydraulic Systems (C, L) 3

Studies radial and axial piston type pumps, stroke control valves, accumulators, closed center rotary and spool valves, pressure control valves, direction control valves and volume control valves, with emphasis on preventive maintenance.

5127 Hydraulic Assist Transmissions (C, L) 3

Studies hydraulic components of the main hydraulic supporting systems, including hydraulic assist steering, brakes, clutches, differential locks, power take off mechanisms and hydraulic assist transmissions, with emphasis on preventive maintenance.

5130 Practicum (P) 1-15

Provides extended practice and skill development opportunities directly related to one or more specific courses.

5132 Diesel Engines II (C, L) 3

Studies diesel pumps and injectors, their timing and permissible service during tune-up; studies laboratory pumps and nozzles as to function and purpose.

5133 Environmental Control (C) 4

Studies natural resources in depth, including where we stand today in battle for preservation; agriculture's responsibility in areas of soil, water and air pollution; and technician's role.

5134 Parts Department Management (C) 3

Studies the science of operating the parts department under accepted management procedures documented by successful dealers of the industry, including inventory control and turnover and profit margins, with emphasis on obsolete parts and their management and customer relations; also diagnosis of fill rate and emergency orders.

5135 Diesel Engines III (C, L)	2	
Employees dynamometer loading of a diesel engine to study thermal efficiency of engine with and without a turbocharger installed; engine fitted with intake and exhaust manifold vacuum-pressure gauges pyrometer, tachometer and manometer; also tune-up on dynamometer to original equipment manufacturer's specifications; emphasizes preventive maintenance.		
5136 Hydrostatic Transmissions (C, L)	3	
Deals with components of systems, including variable flow hydrostatic pumps and motors, charge pumps, check valves, control valves, crossover relief valves, shuttle valves, swashplates and servo pistons.		
5137 Service Department Management (C)	3	
Deals in operating the service department under accepted management procedure documented by successful dealers of the industry, with the selling of a purchased commodity—labor as the basis for course; includes recovered labor costs, incentive programs, scheduling shop flows, flat rate, shop tickets, merchandising and customer relations.		
5142 Town and Garden Equipment I (C, L)	3	
Studies equipment powered by internal combustion engines of less than 35 horsepower; also includes plows, disks, harrows, rakes, tillers, seeders, fertilizer spreaders, sprayers, standby alternators, irrigation pumps and mowing equipment, with preventive maintenance and safety emphasized.		
5144 Crawler Undercarriages (C)	2	
Studies service requirements for the 13 main components of a crawler undercarriage, including servicing of flush and counterbored track links and the track master link; diagnosis of undercarriage alignment as well as track alignment; emphasizes preventive maintenance and safety.		
5145 Farm Machinery II (C, L)	3	
Studies set-up, adjustment, predelivery performance and calibration of components related to planters, drills, chemical and fertilizer machinery, including cultivation machinery; emphasis on preventive maintenance and safety.		
5146 Fuels, Lubricants and Coolants (C)	3	
Brings into focus the fuel requirements and specifications for each of the 3 fuels used in internal combustion engines, with the lubricant specifications as specified in the operator's manual studied in relation to published specifications as determined by the American Petroleum Institute; also studies coolant service and requirements; emphasis on preventive maintenance.		
5147 Bearings and Seals (C)	3	
Studies in detail friction and anti-friction bearings and dust and liquid seals, including bearing and seal installation for each type of bearing and seal, and proper preload and endplay of bearings; emphasis on proficiency of installation as well as preventive maintenance.		
5148 Belts and Chains (C)	2	
Studies belt types and load rating along with proper installation as to alignment of belt pulleys and tightness of belts, with chain types and sprocket alignment as well as chain sag discussed; emphasis on daily preventive maintenance.		
5149 Tires and Tracks (C)	2	
Studies off-the-road tires, including size, composition, codes, service and maintenance; emphasis on track maintenance instruction to operators and preventive maintenance and safety.		
5151 Farm Machinery I (C, L)	3	
Studies primary and secondary soil tillage tools, including set-up, adjustment and predelivery performance of plows, disks, harrows, multiple purpose tools and tiller, with emphasis on operational safety precautions.		
5156 Hydrostatic Hydraulics Systems (C, L)	3	
Studies theory of fluids under high pressure but limited flow rate, as used in closed-loop positive displacement components; also hydrostat motor and pump circuits along with controlling components; emphasis on preventive maintenance.		
5157 Agricultural and Industrial Equipment Sales (C)	2	
Studies art of selling new and used equipment at a profit, including trade downs, wash out sales, and scrapping procedures; cost of doing business, pricing, sales incentive and follow-up; equipment auctions and jockey's role in price determination; and cold canvassing as means of increasing equipment sales.		
5158 Diesel Engines IV (C)	2	
Studies V-8 diesel, pump injector, single unit, supercharger, two cycle diesel theory, ameroids and servicing in course for industrial servicemen.		
5159 Torque Converters (C)	2	
Studies multiplication of torque at sacrifice of speed, including pumps, turbines, stators and lockout clutches on component units; emphasis on operational and maintenance requirements as tools of instruction to operator of units.		

5162 Diesel Injection Nozzle Service (C, L)	2	Applied Fire Science
Studies in detail injection nozzle types and service, including procedure for timing and cleaning orifices, lapping machined areas, cracking pressure and delivery rate adjustment, proper installation into head and proper torque specification.		
5163 Internal Combustion Engines Lab (C, L)	3	5313 Introduction to Fire Technology (C)
Studies in depth internal combustion engines typically used in the agricultural equipment industry.		Introduces fire problems, and broadly touches various phases of the fire technology field, including characteristics and behavior of fire and hazardous properties of materials; uses NFPA Fire Protection Handbook as text.
5164 Farm Machinery III (C, L)	3	5314 Fire Apparatus I (C)
Deals with harvesting and handling machinery common to area farms, including mowers, hay rakes and balers, grain and corn combines, forage harvesters, grain dryers and related crop handling equipment including augers and elevators; emphasis on operation safety.		Includes driving techniques, construction and operation of pumping engines.
5165 Diesel Pump Calibration and Service (C)	2	5322 Electricity (C, L)
Amount and rate of delivery of diesel injection pumps will be calibrated on a diesel pump test stand; studies overhaul and diagnosis of pump wear, plus assembly and setting to pump specifications on the pump stand and running advance of injection; emphasizes preventive maintenance.		Studies basic concepts required of electrical workers, with emphasis on concept of series circuits, parallel circuits, series parallel combinations circuits and Ohm's Law, plus basic definition of electromotive force, current and resistance.
5166 Suburban Garden Equipment I (C, L)	3	5323 Fire Apparatus II (C, L)
Studies equipment powered by internal combustion engines of less than 35 horsepower, plus related equipment including plows, disks, harrows, rakes, tillers, seeders, fertilizer equipment; emphasis on preventive maintenance and safety.		Includes construction and operation of aerial ladders, aerial platforms, specialized equipment and maintenance; uses IFSTA Manual 106 as text.
5167 Customer Relations (C)	3	5324 Fire Department Hydraulics I (C)
Demonstrates how the agricultural equipment technician must be highly proficient in customer relations and should master basic skills in this area.		Prerequisite: Technical Mathematics I
		Applies hydraulic laws and formulas to the fire service.
5168 Agricultural Safety (C, L)	3	5325 Fire Department Hydraulics II (C, L)
Covers in depth those aspects of safety which the agricultural equipment technician can most effectively use.		Uses pump simulator to show operations, skills and techniques to pump operators.
5169 Preventive Maintenance (C, L)	2	5393 Building Materials (C)
Studies a broad range of equipment and special maintenance problems which must be systematically addressed to prevent undue costs in keeping costly equipment functional and efficient.		Covers basic architectural and structural construction materials and their applications, with building materials considered for usability and cost feasibility.
		5332 Fire Fighting Strategy and Tactics I (C)
		Presents pre-plan for fires, combined operations, mutual aid, disaster planning and problems in unusual fire operations.
		5333 Fire Alarm and Protection Equipment (C, L)
		Presents fundamentals of municipal and local alarm systems; heat, smoke and flame detectors; telephone, teletype and radio systems; portable fire extinguishing equipment; sprinkler systems; and protective alarm and detection systems.
		5334 Fire Fighting Strategy and Tactics II (C, L)
		Continues 5332 with emphasis on the tactical simulator.

5342 Hazardous Materials I (C, L)	3	5364 Legal Problems in Fire Service (C)	4
Reviews basic chemistry, storage, handling laws, standards and fire fighting practices pertaining to hazardous materials.			
5343 Rescue Practices and Procedures (C, L)	3	5391 Management Essentials (C)	4
Presents rescue practices, including fire rescue and auto extraction, procedures on aircraft rescue and fire fighting, and the fire department's responsibilities in protection of evidence at the scene of an aircraft incident.			
5350 Applied Chemistry II (C, L)	2	5394 Aircraft Fire Fighting I (C, L)	3
Studies principles of theory of chemistry, including solutions, acids and bases, chemical kinetics and equilibrium, plus an introduction to organic chemistry, biochemistry and industrial chemistry.			
5351 Industrial Safety and Fire Control (C)	3	Includes both theory and practice in operating airport fire equipment and using water fog lines, both high-pressure and low velocity fog applications, special agents and various methods of application of agents; emphasizes rescue methods and equipment as well as unique fire hazards of aircraft and their cargo.	
Includes considerations of managerial and supervisory responsibility for fire and accident prevention, investigation of accidents, preparation of accident reports, machine guarding, use of personnel protective equipment, conformity to state industrial accident code and fire regulations, provision for first aid, use of safety committees and methods of developing, advertising and promoting good safety and fire prevention program.			
5352 Hazardous Materials II (C, L)	3	5395 Aircraft Fire Fighting II (C, L)	3
Continues study of hazardous materials.			
5353 Fire Investigations (C)	3	5396 Shipboard Firefighting (C, L)	3
Introduces arson and incendiarism, and arson law.			
5360 Fire Service Inspection (C)	4	Studies fire fighting for land-based companies, hookups, equipment used, procedures, use of water and foams, and support of systems on ships.	
5361 Fire Service Organization and Management (C)	4	5397 Radioactive Emergencies (C, L)	3
Considers basic concepts and principles of administration applicable to organization and administration of an efficient fire department.			
5362 Fire Department Specifications (C)	4	Includes radiation hazards, fire-fighting procedures in generating plants, transportation fires and emergencies for fire service and safety people.	
Consists of preparation of specifications for apparatus, hose and minor equipment, and fire station specifications.			
5363 Fire Prevention (C)	4	<i>Architectural Drafting</i>	
Studies organization and function of the fire prevention organization, including inspections, surveying and mapping procedures.			
5422 Residential Construction Materials (C)	3	5422 Residential Construction Materials (C)	3
Studies basic materials for residential construction and their application, with consideration to usability and cost feasibility.			
5423 Commercial Construction Materials (C)	3	5423 Commercial Construction Materials (C)	3
Studies application to commercial and industrial building construction, with emphasis on economics and suitability.			
5430 Light Construction Presentation Drafting (C, L or S)	3	5430 Light Construction Presentation Drafting (C, L or S)	3
Develops drawings for a residence, including size and space relationships.			

Prerequisite: 7522

5431 Light Construction Layout Drafting (C, L or S)	3	Prerequisite: 7522
Includes preparation of working drawings, including foundation and floor plans, wall sections and plot plan, climate control and electrical plans.		
5432 Mechanical and Electrical Equipment (C)	3	
Introduces the mechanical and electrical systems in a structure, including plumbing, climate control and electrical systems.		
5433 Light Construction Detail Drafting (C, L or S)	3	Prerequisite: 5431
Includes preparation of working drawings, including interior elevations, window and door details with the appropriate schedules and details of special built-in features.		
5440 Medium Construction Presentation Drafting (C, L or S)	3	Prerequisite: 5433
Develops presentation drawings for a building using masonry units, with study of size and space relationship and codes as the design basis.		
5441 Medium Construction Layout Drafting (C, L or S)	3	Prerequisite: 5433
Prepares working drawings, including foundations and floor plans, roof plan, wall sections and plot plan; also climate control, plumbing and electrical systems.		
5442 Medium Construction Detail Drafting (C, L or S)	3	Prerequisite: 5443
Prepares working drawings, including exterior and interior elevations, window and door details with the appropriate schedules and details of special built-in features.		
5450 Heavy Construction Presentation Drafting (C, L or S)	3	Prerequisite: 5433
Develops presentation drawings for a building using masonry and steel construction, with study of size and space relationships and codes as the design basis.		
5451 Heavy Construction Layout Drafting (C, L or S)	3	Prerequisite: 5433
Prepares working drawings, including foundations, floor and roof plans, wall sections and plot plans; also climate control, plumbing and electrical systems.		
5452 Estimating (C)	3	Prerequisite: 5422, 5423
Includes basic and fundamental principles of "taking off" quantities of building materials as required by building construction contractor; also fundamental concepts readily applicable when quantity "take-off" from a set of plans is prepared.		
5453 Heavy Construction Detail Drafting (C, L or S)	3	Prerequisite: 5433
Prepares working drawings, including exterior and interior elevations, window and door details with appropriate schedules and details of special built-in features.		
5460 Team Project Presentation Drafting (C, L or S)	3	Prerequisite: 5433
Develops presentation drawings for industrial or residential building as approved by the instructor, with students formed into teams to provide atmosphere of "the world of work."		
5461 Team Project Layout Drafting (C, L or S)	3	
Prepares working drawings, including exterior and interior elevation window and door details, with appropriate "schedules" and details of special built-in features.		
5462 Team Project Detail Drafting (C, L or S)	3	
Prepares detailed drawings, including exterior and interior elevation window and door details, with appropriate "schedules" and details of special built-in features.		
5470 Business Presentation Drawing (L or S)	4	
Consists of students, functioning as a team representing various agencies assimilating and computing data as needed, completing a set of working drawings for either light industry or an office building as approved by instructor.		
5471 Surveying Theory (C)	1	
Presents theory covering fundamentals of surveying, proper use and care of basic surveying equipment, including level and transit.		
5472 Surveying Field Problems (L)	2	Prerequisite: 5471
Gives field exercise class experience in chaining, running a traverse, running a level circuit and keeping an accurate field book.		
5473 Architectural Rendering (C, L or S)	3	
Presents introduction, history and review of pictorial types of drawings, study of light and color, rendering		

media and application of different techniques and media by practical exercises.

5474 Plat Mapping (C, L) 3

Studies land boundary relationships with respect to common domain system of surveying, with emphasis on latitude and departure system of drawing layout, areas determination and use of aerial photographs.

5475 Topographic Map Drafting (C, L or S) 3

Gives students experience in topographical surveying, methods of establishing grades and estimating quantities required for cuts and fills.

5476 Architectural Business Principles (C) 3

Presents fundamental economics and basic principles of business and industry, with emphasis on economic and business principles involved in building construction and architectural design field, including architect-client relationships, architect-contractor relationships and operating finances of the architectural organization.

5477 Model Building (C, L or S) 3

Entails small scale three dimension construction of student's drafting projects, including customer presentation for appearance, function, landscaping and structural design.

5478 Specifications and Codes (C) 3

Considers contracts and specifications as they relate to plans, building codes and actual construction, with basic relationships between specifications and working drawings considered from legal and working standpoint.

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Industrial Drafting

7510 Basic Drafting (C, L or S) 3

Introduces lettering, sketching, basic dimensioning, scale reading and geometric construction.

7511 Intermediate Drafting (C, L or S) 3

Continues 7510, with study of techniques of isometric, oblique and perspective projections, auxiliary views, rections and precision dimensioning and tolerance.

7520 Descriptive Geometry (C, L or S) 3

Studies graphic solution of engineering problems, such as true length, piercing points of a plane, line intersections, revolutions and developments.

7521 Industrial Processes and Systems (C) 3

Studies manufacturing processes and equipment selection and use of modern machine tools, including basic methods of fabrication used in modern manufacturing, plus welding, electroforming, metallic coating, anodizing, plating and machine tool numerical control and hydraulic systems as used in industrial processes.

7522 Production Drawings (C, L) 3

Studies working drawings, detail and assembly drawings, use of handbook data, developments and intersections, with emphasis on thread fasteners, springs and weldments.

7530 Product Drafting I (C, L or S) 3

Studies detail and assembly drawings, stock lists, springs, weldments and catalog items.

7531 Mechanisms and Machines (C) 3

Prerequisites: 7511, 8209,
8301

Studies procedures and consideration in design of simple machine elements, including shafts, bearings, keys, pins, springs, clutches, brakes and pressure cylinders simulating current industrial methods; also includes displacement velocity and acceleration, analysis of linkages, cams and gears, geometry of involute gears, properties of a standard spur, helical, bevel and planetary gear.

7532 Tool Drafting (C, L or S) 3

Prerequisite: 7522

Studies detailing of metal cutting tools, jigs, fixtures, gauges and tools used in manufacturing processing.

7533 Die Drafting (C, L or S) 3

Studies planning and detailing of blank, piercing and forming dies, and plastic mold and die casting.

7540 Product Design Drafting (C, L or S) 3

Designs complete machines, sub-assemblies of machines, or new products, with emphasis on analyzing the problem, gathering data, sketching ideas, making working drawings, and finally checking work.

**7541 Advanced Tool and Gauge Design
Drafting (C, L or S) 3**

Studies design and use of large jigs, fixtures, cutting tools, tool holders, gauges and gauging procedures.

7543 Technical Illustration (C, L or S) 3

Uses advanced isometric and perspective drawing principles giving illusion of tri-dimensional pictures and exploded views, with shading, shadows, and highlights

used advantageously to elaborate and embellish drawing.

7545 Product Drafting II (C, L or S) 3

Studies development and manufacturing of consumable and depreciable items along with their design, with special attention to use of standard catalog sizes and equipment.

7547 Electronic Drafting (C, L) 3

Studies practical applications in industrial wiring methods and design, including circuit and conductor calculations, motor circuits and control, transformer and entrance layouts, illumination design, machine tool hook-up and circuiting, with National Electrical Code introduced as it applies.

**7550 Gear and Cam Design
Drafting (C, L or S) 3**

Prerequisite: 7522

Considers basic cam design converting rotary motion into linear with application of physical principles inherent in cam design, with gears studied in detail as to type and function; includes transmission of power, speed and mechanical advantage.

7551 Statics (C, L) 3

Covers vector analysis, equilibrium, truss analysis, centroids, moments of inertia and center of gravity in non-calculus course.

7552 Strength of Materials (C) 3

Covers stress, strain, shearing and bending diagrams, elasticity and loading capabilities of members under working loads in non-calculus course.

**7553 Advanced Die Design Drafting
(C, L or S) 3**

Presents designing and drafting of piercing and forming dies, including design procedure for blanking, progressive, compound, piece-part-form-bend and draw dies using standards and handbook data.

7555 Mold Design Drafting (C, L or S) 3

Studies forming of metallic and non-metallic materials for manufacturing of products, machine tools, gears, cams, etc.; also studies different methods of mold designing.

7556 Cutting Tool Design Drafting (C, L or S) 3

Explores theory of metal removal designing cutting tools of heat treated steel with carbide inserts and ceramics; also internal and external broaches.

7557 Jigs and Fixtures Design

Drafting (C, L or S)

3

Considers study and design of jigs and fixtures covering basic types used in industry, with intensive procedures of detailing out of assembly; emphasizes theory of gauging; basic terminology ring, snap, flush, pin, thread, indicator and location gates; and dimensioning and tolerancing of gauges.

**7558 Sheet Metal Drafting Project
(C, L or S)**

3

Studies basic elements of sheet metal work as applied to design and layout of sheet metal forms, with students proceeding rapidly into practical layout problems met in duct work designing industry.

7560 Machine Design Drafting (C, L or S) 3

Considers design of machines and mechanisms as tools of production, with use of hydraulics and pneumatics in actuating and controlling automated machines.

7564 Practicum in Metallurgy (L) 1

Includes understanding basic principles of metallurgy; heat treat color spectrum, grain growth, recrystallization and other characteristics; preparation of testing material, carbon spark test, ductility and strength; understanding the isothermal transformation diagram of carbon steel; and usage of S.A.E. and A.I.S.I. code standards.

7565 Metallurgy Fundamentals (C) 2

Studies fundamentals of thermodynamics and reactions that occur in metals subjected to various heat-treatment methods and techniques; use of gas and electric furnaces and their controls; heat treatment principles as applied to ferrous and non-ferrous materials; properties of metals and tests to determine uses; chemical and physical metallurgy, theory of alloys, treatment for steels, special steels and cast iron, powder and metallurgy and classification of metals.

7571 Industrial Planning and Estimating (C) 3

Applies recognized techniques and tests to measure value and thus eliminate unnecessary costs in design, development and manufacturing engineering and research, industrial engineering, materials management, process and product control, facilities planning, plant engineering and manufacturing information systems; also includes study of time and motion in the practical application area using industrial practice as basis for establishment of rates.

7572 Industrial Design Project Drafting **6**
(C, L or S)

Provides opportunity to integrate knowledge previously acquired to design complete machines or sub-assemblies of machines, including analyzing problems, gathering data, sketching ideas on paper, doing necessary mathematical calculations, making working drawings, and finally checking work; also developing individual judgment and initiative.

5621 Frame and Chassis II **(C, L or S)** **2**
Continues 5620, with emphasis on conditions found in frame damage; includes frame gauges, team gauges, and other measuring devices.

5622 Frame and Chassis III **(C, L or S)** **2**
Develops skills in attaching car to frame machine using proper equipment, with emphasis on correction of minor frame misalignments.

5623 Frame and Chassis IV **(C, L or S)** **2**
Emphasizes correcting major frame damage, inspections, analysis and procedures for restoring alignment of body structure and unibody automobiles.

5624 Auto Body Welding I **(C, L or S)** **2**
Studies applications of basic welding techniques in replacement and repair of panels, with techniques peculiar to automotive body repair also covered.

5625 Auto Paint Shop Practices **(C, L or S)** **2**
Continues auto painting with emphasis on material and equipment handling.

5630 Collision Damage Appraising **(C, L or S)** **2**
Studies use of estimation guides, procedures for itemizing damage, interpreting abbreviations, part numbers, and conversion tables for time and money; emphasizes visual and physical inspection of damage, recording on estimate sheet in proper sequence, figuring correct cost for parts and materials and obtaining correct total.

5631 Upholstering **(C, L or S)** **2**
Studies basic techniques of automobile interior refinishing along with study of spring construction, filling and fabrics; develops manipulative skills necessary through practice of various projects on seats, panels and arm rests.

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Automotive Body Repair

5601 Basic Body Repair I **(C, L or S)** **2**

Instructs students on characteristics of body metals and familiarization and installation of moldings, ornaments and fasteners.

5602 Basic Body Repair II **(C, L or S)** **2**

Studies care and use of hand and power tools and equipment with emphasis on tool and shop safety; includes analysis of damaged sheet metal.

5603 Basic Body Repair III **(C, L or S)** **2**

Studies advanced basic body repair with emphasis on grinding, picking, filing and plastic applications related to minor damage repair.

5604 Basic Body Repair IV **(C, L or S)** **2**

Introduces students to skills necessary in preparing automobile for painting, including cleaning, masking and sanding.

5610 Practicum (P) **1-15**

Provides extended practice and skill development opportunities directly related to one or more specific course.

5611 Collision Damage Repair I **(C, L or S)** **2**

Provides students with knowledge and understanding needed to analyze extensive body damage, determine what tools are needed, and procedures used to replace panels.

5612 Collision Damage Repair II **(C, L or S)** **2**

Continues panel replacement fundamentals with emphasis on developing skills needed in replacing extensively damaged panels.

5620 Frame and Chassis I **(C, L or S)** **2**

Increases students' knowledge of frame and chassis nomenclature including front suspension and rear axle; emphasizes tools and frame machines used in repair.

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Automotive Service

5812 Automotive Chassis and Suspension Systems **(C, L or S)** **2**

Covers various frame designs used in construction of automobile, including suspension components; also repair and service of suspension components such as ball joints, idler arms, tie rod ends, etc.

5813 Automotive Braking Systems (C, L or S) 2	5828 Electronic Ignition Systems (C, L or S) 2
Studies automotive braking systems, including hydraulic theory, with emphasis on service and repair of all brake components, including booster units, master cylinder, wheel cylinder, caliper rebuilds and drum and rotor service.	Prerequisite: 5827 Exposes students to basic principles of electronics, with emphasis on electronic ignition systems used in today's automobiles.
5814 Automotive Front End Alignment 2 (C, L or S)	5832 Starting and Charging Systems—Testing (C, L or S) 2
Co-requisite: 5812 Studies fundamentals of wheel alignment and wheel balance, including each of the five wheel alignment angles, steering wheel positioning, vehicle tracking and wheel balancing principles in detail.	Prerequisite: 5823 Studies construction, function, and principles of operation and testing of electrical units of the automobile; includes starting motors, batteries and charging systems.
5815 Practicum (L or S) 1-15	5833 Starting and Charging Systems—Overhaul (C, L or S) 2
Provides extended practice and skill development opportunities directly related to one or more specific courses.	Prerequisites: 5823, 5832 Emphasizes developing a comprehensive understanding of all electrical components and systems with emphasis on problem diagnosis and bench repair of units.
5821 Engine Theory, Design and Construction 3 (C, L or S)	5834 Engine Overhaul (C, L or S) 2
Covers internal combustion engines, including theory of operation, design characteristics, construction and diagnosing of problems.	Prerequisite: 5822 Covers tear-down, inspection, measuring, cleaning, machining, repair and proper assembly techniques used during engine overhaul, including cooling systems.
5822 Engine Tool and Equipment (C, L or S) 2	5835 Manual Transmission Overhaul 2 (C, L or S)
Familiarizes students with tools, machines and equipment needed for rebuilding internal combustion engines.	Studies theory, operation, troubleshooting and repair of power train of vehicles as it leaves engine and is delivered at wheels, with emphasis on operation and maintenance of clutches and manual transmissions.
5823 Basic Electricity (C, L) 3	5843 Differentials and Rear Axle Overhaul 2 (C, L or S)
Introduces basic electrical theory, automotive components and circuits, emphasizing construction, function and principles of operation of the battery.	Continues study of power train as it leaves engine and is delivered at wheels, with emphasis on universal joints, differentials, and rear axle assemblies.
5825 Fuel and Carburetion—Theory and Circuits (C, L or S) 3	5845 Advanced Tune-up (C, L or S) 2
Studies automotive fuels, carburetor fundamentals, circuits and diagnosis procedures.	Prerequisite: 5852 Familiarizes students with importance and necessity of troubleshooting and pin-points diagnostic procedures, with emphasis on operational principles of automotive engine and components supporting good performance; uses laboratory for diagnosis and evaluation.
5826 Fuel and Carburetion—Overhaul 2 (C, L or S)	5846 Vehicle Inspection and Safety (C, L) 2
Prerequisite: 5825 Emphasizes shop procedures for trouble-shooting, repairing, and replacing or overhauling fuel system components.	Studies various federal and state regulations concerning automotive safety devices and proper operations, with emphasis on techniques of overall vehicle inspection to determine compliance with existing federal and state laws.
5827 Conventional Ignition Systems 2 (C, L or S)	
Studies conventional breaker point ignition system components, functions, principles of operation and testing.	

5847 Air Conditioning—Theory, Service and Components (C, L or S)	2	5859 Motorcycle Maintenance (C, L)	3
Studies theory, function of components and normal minor service maintenance.			
5848 Air Conditioning—Diagnosis and Repair (C, L or S)	2	Prerequisite: 5847	
Covers diagnosis of air conditioning malfunctions and repair, replacement and overhaul of various components.			
5851 Automotive Accessories (C, L or S)	2	Prerequisite: 5823	
Presents basic study of function, construction, principles of operation and troubleshooting techniques for varied accessories of automotive vehicles, including maintenance of lighting and signalling systems, headlight dimmers, electrically-operated safety devices, buzzers, flashers and electric motor-operated devices.			
5852 Engine Tune-up (C, L or S)	2	Prerequisites: 5823, 5825, 5826, 5827, 5828, 5832, 5833	
Studies operational principles of automotive engine and components that support good performance, including diagnosis, evaluation and complete tune-ups performed in laboratory.			
5854 Automatic Transmissions—Theory and Operation (C, L or S)	3		
Studies automatic transmissions, including construction, function and principles of operation, with emphasis on power flow within transmission.			
5855 Automatic Transmissions—In-Car Service (C, L or S)	2	Prerequisite: 5854	
Provides understanding of automatic transmission operational diagnosis and preventive maintenance servicing.			
5856 Automatic Transmissions—Bench Overhaul I (C, L or S)	2	Prerequisite: 5855	
Stresses practical type work on dead transmissions and their components.			
5857 Automatic Transmissions—Bench Overhaul II (C, L or S)	2	Prerequisite: 5856	
Studies theory and practical work including diagnosis, correction and testing malfunctions on live transmissions.			
5861 Automotive Blueprint Reading (C)	4		
Presents fundamentals of blueprint reading and sketching as they apply to various automobile components.			
5862 Comprehensive Diagnosis and Procedures I (C, L or S)	2		
Provides work environment typical of automotive service centers for advanced skill practice and development, with vehicles diagnosed, evaluated and given approval of inspector; includes performance of major and minor repair to journeyman's standards with minimal supervision and instructor assistance.			
5863 Comprehensive Diagnosis and Procedures II (C, L or S)	2	Continues 5862.	
5864 Automotive Parts Handling (C)	3		
Studies facility and personnel requirements of an efficiently run parts department, emphasizing principles, practices and procedures with a profitable operation as an example; includes interpreting manufacturers' catalogs and component numbering systems, as well as techniques for installing and maintaining a practical inventory control system.			
5865 Service Organization and Management (C)	3		
Studies methods of work and time scheduling in service shop and techniques of obtaining maximum work efficiency from a group of mechanics and specialists, including general principles of service station sales, service and customer relations.			
5866 Occupational Safety and Health for Auto Service Environments (C, L)	4		
Introduces principles of occupational safety and health in a survey course covering basic principles and techniques. (required for OSH majors and suitable for management and supervisory certificate students)			
5867 Basic Shop Practices (C, L)	2		
Studies fundamental shop procedures, safety, tools and machines.			

5868 Small Engine Maintenance (C, L) 3	6240 Diesel Engine Diagnosis (C, L or P) 3
Covers theory of operation on small engines, service and adjustment, concentrating on skills of diagnosis and total repair or rebuilding of small engine.	Prerequisite: 6230 Covers diagnosis and correction of malfunctions of domestic diesel engines and includes practice on live engines.
5869 Recreational Vehicle Maintenance 3 (C, L)	6241 Heavy Duty Brakes Systems (C, L or P) 2
Involves study of special characteristics and maintenance problems of recreational vehicles.	Prerequisite: 5813 Studies heavy duty braking systems, including fundamentals of air brake systems and components, with emphasis on service and repair of all brake components, troubleshooting and diagnosis.
6220 Diesel Engines I (C, L or P) 3	6242 Heavy Duty Chassis and Suspension 2 (C, L or P)
Covers 2 and 4-cycle diesel engines, including construction and principles of operation, valves, sleeves and bearings in detail; laboratory work includes building a diesel engine.	Studies various frame designs used in construction of a truck, including suspension components, with students gaining experience in repair and service of suspension components such as king pins, tie rods, springs and shocks.
6221 Diesel Electrical Systems I (C, L or P) 2	6245 Basic Shop Practices (C, L or P) 2
Prerequisite: 5823 Covers diesel ignition systems, starting systems, generators and alternators, with laboratory work on diesel engines as related to the respective systems.	Studies fundamental shop procedures, safety tools and machines.
6230 Diesel Engines II (C, L or P) 3	6246 Practicum (P) 1-15
Prerequisite: 6220 Continues 6220 with in depth study of diesel engine block and related components, with laboratory work including engine overhaul.	Provides extended practice and skill development opportunities directly related to one or more specific courses.
6231 Fluid Power Fundamentals (C) 3	<i>In class</i>
Covers fundamentals of fluid power including principles, functions, terminology and symbols of hydraulics and pneumatics, with emphasis on understanding of basic hydraulic principles and equipment; development of hydraulics, advantages and problems in hydraulics setups, and physical properties of liquids; principles of operation and constructional features of hydraulic pumps, motors and valves and types and uses of seals, packings and tubing; and applications of hydraulic components in typical circuits and industrial equipment.	Building Construction
6232 Diesel Pump and Fuel Systems I 2 (C, L or P)	6001 Carpentry Fundamentals (C, L or S) 3
Covers diesel super and turbo chargers, governors, cooling systems and fuel injectors, with laboratory work on diesel engines as related to the respective systems.	Probes and illustrates traditional and progressive skill needs of introductory students in Building Construction Technology; also defines and illustrates current methods of construction, researches the trends of building and reviews the history of this trade area.
	6002 Construction Tools and Skills 3 (C, L or S)
	Provides students with opportunity to study various tools and become skilled in the operation, maintenance, and safety factors of each.
	6003 Construction Materials (C, L or S) 3
	Provides information about materials used in the building industry; includes in-depth study of the manufacturing process and systems of purchasing.

6004 Safety and First Aid (C, L)	3	with emphasis on required skills and time factors of each area in framing.	
Acquaints students with basic principles of safety and first aid techniques in the trade and industry, including procedures and practicum in environmental emergency, and effective safety protection.			
6010 Practicum (L or S)	1-15	6022 Plumbing—Design and Installation (C, L or S)	3
Provides extended practice and skill development opportunities directly related to one or more specific courses.		Covers plumbing techniques for working with pipe and fittings, how to rough in plumbing, install drainage, water systems, fixtures, water heaters, all within the scope of the plumbing code.	
6011 Floor and Wall Layout and Construction (C, L or S)	3	6023 Blueprint Reading II (C, L)	3
Develops necessary skills for laying out floor and wall systems, including how they are designed and constructed.		Develops proficiencies in interpretation of more complex blueprints including notations, conventional symbols and dimensions, with students introduced to basic mechanical drafting skills.	
6012 Roof Construction (C, L or S)	3	6024 Plumbing Fundamentals (C, L or S)	3
Studies various roof systems, how they are laid out and constructed; emphasis on use of the framing square.		Gives beginners clear understanding of the home plumbing system and how it works, including necessary tools, water supply systems, acceptable materials for water, drainage, fixtures and many items of code.	
6013 Blueprint Reading I (C, L or S)	3	6025 Plumbing—Plumbing Blueprint (C, L)	3
Provides instruction and practice in study of working drawings and application of understandings from the "print" to the "work"; includes relationship of view and details, interpretation of dimensions, transposing scale, tolerances, electrical symbols, sections, material symbols, material lists, architectural plates, room schedules and plot plans.		Develops skills to read, understand and interpret blueprints (residential plans), including symbols, using an architect's scale, pipe drawing and isometric pipe layout.	
6014 Electrical Wiring Fundamentals (C, L or S)	3	6026 Masonry—Advanced Skills in Masonry (C, L or S)	3
Studies basic electricity, including electron theory, Ohm's Law and proper use of electrical measuring instruments; also simple series and parallel circuits, switching devices and fusing.		Prerequisite: 6036 Covers building of corners, wall reinforcing, masonry supports, chases, small one-flue chimneys, corbeling and wall copings, with emphasis on residential veneering, cavity wall construction, concrete reinforcement, and special finishes.	
6015 Residential Wiring (C, L or S)	3	6027 Masonry—Masonry Estimating and Specifications (C, L)	3
Covers practice of residential wiring, including electrical service, metering equipment, lighting, switches, outlets and other components common to residential wiring, installation and maintenance.		Prerequisites: 6013, 6023, 6036 Presents specifications, line and symbol identification, dimensioning and scaling, with working drawings studied and applied; emphasis on residential blueprints and their relation to masonry profession.	
6020 Electrical—Electrical Blueprint (C, L or S)	3	6030 Electrical—Electrical Estimating (C, L)	3
Prerequisite: 6015 Covers basic blueprint problems electricians encounter in a commercial building and develops skills necessary to translate blueprint information into proper methods of installation.		Prerequisite: 6020 Studies building plans and specifications, how to make takeoffs and compile quantity surveys, current pay scales in the electrical field; also materials and labor factors.	
6021 Carpentry—Advanced Framing (C, L or S)	3	6031 Electrical—Commercial Wiring (C, L or S)	3
Prerequisites: 6011, 6012 Studies floor, wall and roof layout and construction,		Prerequisites: 6014, 6015 Introduces wiring methods and materials in conform-	

ance with the National Electrical Code; covers basic fundamentals of mechanical and electrical installations with emphasis on tool usage and material selection.

6032 Carpentry—Exterior Trim (C, L or S) 3

Develops required skills for finishing exterior of a building, including installing the cornice, windows, doors and various types of sidings.

6033 Carpentry—Interior Trim (C, L or S) 3

Develops ability to accurately measure, cut and fit moldings, paneling and finish flooring; also how to hang doors, install hardware and cabinets.

6034 Carpentry—Millwork (C, L or S) 3

Combines courses of cabinetry and millwork for students who wish to receive only basic knowledge on each area.

6035 Plumbing—Plumbing Estimating (C, L) 3

Prerequisites: 6022, 6024,
6025

Studies estimating cost of complete plumbing system; discusses compiling quantity surveys and takeoff from blueprint and specifications; also labor, types of material and necessary equipment.

6036 Masonry and Concrete Fundamentals (C, L or S) 3

Prerequisites: 6002, 6003

Covers materials and methods of construction, building layout, preparation of building site, footings and foundations, wall construction, including form construction and erection; emphasis on basic tools and materials used in masonry field, physical properties of brick and concrete block.

6041 Masonry—Special Problems in Masonry Construction (C, L or S) 3

Prerequisite: 6036

Studies chimneys, stone and rock masonry, metal pre-formed fireplaces, archways and supporting openings in masonry, and design of chimneys and their sizing.

6045 Masonry—Special Problems in Concrete (C, L or S) 3

Prerequisite: 6036

Covers different concrete finishes, reinforcing, footing designs and waterproofing construction techniques, with jointing requirements, design mixes and curing procedures studied and applied.

6047 Carpentry—Cabinetry (C, L or S) 3

Develops knowledge and skills in building of cabinets, including methods of construction, necessary hardware and installation; also, making countertops.

6048 Electrical—Industrial Wiring (C, L or S) 3

Prerequisites: 6014, 6015

Covers wiring methods and materials and use in conformance with National Electrical Code, with emphasis on AC/DC machines and controls.

6049 Plumbing—Commercial Installations (C, L or S) 3

Studies in depth field of commercial plumbing, including areas of schools, office buildings, churches, etc., with emphasis on code requirements and commercial blueprints.

6050 Masonry—Advanced Masonry and Design (C, L or S) 3

Prerequisite: 6036

Studies design of masonry building applications and planning of a structure using masonry units, including fireplace construction techniques and selection of materials.

6052 Cabinetry and Millwork (C, L or S) 3

Combines courses of cabinetry and millwork for students who wish to receive only basic knowledge in each area.

6053 Electrical Installation (C, L or S) 3

Prerequisites: 6014, 6015

Studies practical application in wiring and design, including circuit and conductor calculations, motor circuits and controls, transformer and entrance layouts, illumination design, machine tool hookup and circuiting.

6054 Electrical and Plumbing—Mechanical Installation (C, L or S) 3

Develops skill and confidence of performance in a practical application course in electrical and plumbing equipment, installation, troubleshooting, servicing and repairing in areas from residential to commercial within the scope of code.

6055 Mechanical Installation (C, L or S) 3

Studies operation of mechanical equipment in air conditioning, installation of complete systems using this equipment, including heating, cooling, humidification and air cleaning; emphasizes coordination of carpentry work with installation of mechanical equipment, including air conditioning, heating and plumbing.

6056 Carpentry—Estimating and Specifications (C, L) 3

Prerequisites: 6013, 6021,

6023

Studies various systems used in estimating cost of a building, with emphasis on labor, material takeoff and pricing, with intensive study of specifications, what they are, and how they are used.

6060 Advanced Residential Design (C, L) 3
Studies residential floor plans and elevations; basic arrangements analyzed to fit contemporary living patterns; cost, privacy, convenience and efficiency coordinated with needs; exterior styles compared as to costs and aesthetic values; also multiple housing, duplex arrangements, apartments and condominiums, with floor plans, elevations and a perspective drawing made to incorporate conclusions reached from above research.

6061 Basic Theory of Painting and Staining (C, L or S) 3

Covers application of various paints and stains in construction industry, with emphasis on proper selection of materials for various decors and preservation functions.

6062 Wall and Floor Coverings (C, L or S) 3

Studies modern materials and techniques of inside floor and wall coverings, including how different materials affect decor; instructions on how to assess the durability and maintenance of the materials and techniques commonly used in correct installation procedures.

6063 Introduction to Heavy Equipment (C, L or S) 3

Studies equipment technology of various machines, including backhoe tractors, bulldozers, trenchers, forklift, bobcat, screetchrete, vibrator, compactors and air hammers; also capabilities and limitations of machines studied along with cost and maintenance; also observation and actual student operation of equipment in field.

6064 Landscape Architecture and Design (C, L or S) 3

Prerequisites: 6013, 6023

Includes problems of residential, commercial and recreational landscaping, with formal and informal design evaluated considering desired use of specified areas; includes patios, fencing, plantings, pools, topography, orientation, layout, latest trends, color, shape, scale, form, function and costs.

6066 Interior Decorating (C, L or S) 3

Studies general factors influencing quality buying for interiors, including materials and trends in relationship to needs of consumers.

6093 Special Problems in Building Construction (C, L or S) 3

Probes many problems of construction industry, both existing and potential; studies methods of solving these problems. (course taken by permission only)

6094 Advanced Projects in Building Construction (C, L or S) 3
Evaluates students' knowledge and skills, requiring students to construct designated projects with limited supervision, pre-requisites being all framing and interior and exterior trim courses. (course taken by permission only)

6095 Construction Research (C, L) 3

Provides students with special projects or case studies specifically related to occupational area in a field project within the framework of actual working experience in business or industry or a research type case study including data collection and data analysis. (course taken by permission only)

Electronics Communications

6414 DC Fundamentals I (C, L) 3

Provides working knowledge of electrical principles and laws in DC circuits, voltage, current and resistance relationships on an applied basis; also stresses component identification and proper use of lab test equipment.

6413 Fabrication (C, L) 3

Provides practical experience in techniques of electronic construction, fabrication and assembly, with emphasis on proper care and use of shop tools and test equipment.

6414 DC Fundamentals II (C, L) 3

Continues 6412 with introduction to inductance and capacitance.

6420 Introduction to Data Processing and Computers (C, L) 3

Includes both an overview of the technology and data processing and computers, as well as the specific electronic components and circuitry.

6423 AC Fundamentals I (C, L) 3

Introduces AC circuit principles with emphasis in impedance and phase relationships.

6424 Troubleshooting Techniques (C, L) 3

Studies techniques of logic troubleshooting of electronic circuits and simple systems, with emphasis on systematic diagnostic method.

6425 AC Fundamentals II (C, L) 3
Continues 6423 with emphasis on resonant and AC filter circuits.

6426 Electronic Drafting (C, L) 3
Studies techniques used in diagramming electronics circuits and systems, with emphasis on both proper techniques for drawing diagrams, as well as skill in reading and interpreting diagrams and electrical blueprints.

6434 Introduction to Active Devices (C, L) 3
Introduces basic structure and principles of operation of vacuum tube and transistor devices.

6447 Special Semi-Conductors (C, L) 3
Introduces theory and operation of semi-conductor devices other than bipolar transistor; also includes opto-electronic components, FET's and other special semi-conductor devices.

6448 Color Television (C, L) 3
Studies specialized principles and circuits used in color television receivers, emphasizing similarities and differences between color and monochrome.

6450 Television Troubleshooting (C, L) 3
Provides advanced level of skill development in diagnostic procedures, with emphasis on service procedures and installation and adjustment of color and solid-state TV receivers.

6451 Communication Electronics I (C, L) 3
Includes study of AM, FM, pulse, SSB and other modulation systems; also basics of facsimile systems.

6452 Communications Electronics II (C, L) 3
Studies further 2-way communication equipment, including commercial and CB systems, installation, maintenance and trouble shooting.

6453 Communication Electronics III (C, L) 3
Studies commercial AM, FM and television broadcast equipment and antennas involving both operation and maintenance procedures; includes a study of link transmitters.

6454 Electronic Circuits II (C, L) 3
Continues 6435 with emphasis on pulse and logic circuit fundamentals, including basic waveforms of the nonsinusoidal variety frequently used in pulse and logic circuits.

6455 Circuit Analysis (C,L) 3
Consists of circuit and systems analysis using equivalent circuit principles and theorems.

6456 Advanced Troubleshooting (C, L) 3
Covers troubleshooting procedures and techniques related to transmitters and receivers.

6457 Electro-Mechanical Controls (C, L) 3
Studies basic electro-mechanical control systems related to industrial electronics, including basic and pilot control devices; also circuit layout, industrial schematics, reduced voltage starters and multi-speed controllers.

6458 Magnetic Recording (C, L) 3
Covers operation principles of recording systems, including maintenance, alignment and operation.

6459 Business Practices (C) 2
Studies general business practices associated with the successful operation of technical service enterprises.

*Indy's
Electronics*

6520 Microprocessors (C, L) 3
Studies organization, programming and applications of microprocessors.

6525 Introduction to Test Equipment (C, L) 3
Introduces the proper use of lab and shop test equipment for troubleshooting purposes.

6530 Test Equipment Maintenance 3
Studies repair and calibration procedures of electronic test equipment, including vom's, VTVM's, signal generators and oscilloscopes; also study and use of test equipment standards.

6531 Independent Study (C,L) 1-3
Consists of students pursuing approved investigation related to major programs following prescribed scientific method, with evaluation based on a written report . (may be repeated for additional credit)

6538 Rotating Machines I (C) 3
Introduces common industrial rotating machines, both single and polyphase.

6539 Rotating Machines II (C)	3	
Continues 6538 with emphasis on power distribution.		
6540 Medical Electronics I (C, L)	3	
Prerequisite: Approved physiologic course from Health Occupations program		
Introduces bio-electrical potentials including blood flow and pressure, respiration, and cardiac output, with primary concerns on conversion and measurement of these physiological signals.		
6541 Medical Electronics II (C, L)	3	
Continues study of medical electronics equipment, including ECG, EKG, EEG, defibrillators, heart monitors, and other monitoring equipment.		
6542 Medical Electronics III (C, L)	3	
Studies medical support systems such as X-ray equipment, respiration, analyzers and their maintenance; includes preparation for licensing and certification.		
6543 Basic Industrial Electronics (C, L)	3	
Studies characteristics of various transducers and their applications.		
6544 Introduction to Industrial Controls (C, L)	3	
Studies power switching and controlling devices including thyristors and thyratrons.		
6546 Electrical Maintenance (C, L)	3	
Develops electrical maintenance programs for typical industrial and commercial situations, including study of related motors and test equipment for preventive and troubleshooting application; emphasizes protection of life, property and production through proper use of test equipment.		
6550 Electro-Mechanical Controls (C, L)	3	
Studies basic electro-mechanical control systems related to industrial electronics, including basic and pilot control devices such as circuit layout, industrial schematics, reduced voltage starters and multi-speed controllers.		
6551 DC Fundamentals II (C, L)	3	
Continues DC Fundamentals II with emphasis on super-position, the Venin and Norton's Theorems.		
6552 AC Fundamentals III (C, L)	3	
Continues AC Fundamentals II with emphasis on vacuum-tube theory and circuits.		
6553 Industrial Electronics I (C, L)	3	
Continues Industrial Controls with emphasis on systems and circuits.		
6554 Industrial Electronics II (C, L)	3	
Studies process controls and servo systems.		
6562 Digital Principles I (C, L)	3	
Introduces basic combinational logic through use of Boolean algebraic expression.		
6563 Digital Principles II (C, L)	3	
Continues 6562 with emphasis on counters, clocks, registers and arithmetic circuits.		
6574 Advanced Electro-Mechanical Controls (C, L)	3	
Studies advanced electro-mechanical control systems related to industrial electronics.		
6577 Digital Principles III (C, L)	3	
Studies advanced digital systems, including memory and D/A and A/D conversion.		
6578 Digital Applications (C, L)	3	
Studies interfacing and uses of various digital devices, circuits and systems.		
6435 Electronic Circuits I (C, L)	3	
Studies use of active and passive components in power supply, oscillator and amplifier circuits.		
6436 AM Radio (C, L)	3	
Studies AM receiver principles and circuits, developing understanding of amplitude modulation and demodulation.		
6438 FM Radio (C, L)	3	
Studies FM receiver principles and circuits, developing an understanding of frequency modulations, demodulation and multiplex.		
6440 CET Preparation (C)	2	
Prepares students to become certified electronics technicians.		
6441 FCC 3rd and 2nd Class License (C)	4	
Prepares students for acquiring respective government license in concentrated course of study.		
6442 FCC 1st Class License (C)	4	
Prepares students for passing applicable federal test and acquiring the 1st class license.		
6443 Indiana Radio and Television License (C)	4	
Prepares students to acquire state license in especially designed course.		

6445 Monochrome Television (C, L) 3
Studies in depth television circuitry with emphasis on principles of cathode ray tubes, scanning and synchronizing methods and video amplification, including principles of antennas and transmission lines.

6446 Integrated Circuits (C, L) 3
Introduces various classifications and categorizations of linear and digital integrated circuits.

6623 Cable Construction Techniques (C, L) 3
Introduces actual cable system construction techniques, including lead design, cascadeability, system length.

6630 Mechanics of System Design (C, L) 3
Concerns typical parameters used in system design, including active and passive devices, tilt, powering, S/N, and cross modulation.

6631 Solid State Fundamentals (C, L) 3
Prerequisites: 6610, 6614
Introduces basic theory behind operation of solid state devices faced in CATV equipment, including diode, transistors, power supplies, and amplifiers.

6632 Troubleshooting Fundamentals I (C, L) 3
Studies techniques of logical troubleshooting of electronic circuits and simple circuits.

6633 Safety Techniques (C, L) 3
Includes safe climbing, safety equipment, first aid and shock.

6634 Electronic Circuits (C, L) 3
Covers actual circuitry found in cable systems, including headend and outside plant equipment.

6635 Troubleshooting Fundamentals II (C, L) 3
Prerequisite: 6632
Introduces typical malfunctions, including AM and FM radios and television problems.

6640 CATV Troubleshooting Techniques (C, L) 3
Prerequisites: 6632, 6635
Covers techniques used in troubleshooting CATV systems, including trunk and distribution system techniques.

6641 Headend Operations (C, L) 3
Covers headend design and layout, antenna design, maintenance alignment leads and interference.

6642 Preventive Maintenance Practices (C, L) 4
Studies in depth preventive maintenance practices.

6643 Professional Cable Practices (C, L) 3
Introduces ethics and standard practices within CATV field, including planning, controlling, hiring, training and evaluation, plus filing and setting up preventive maintenance schedules.

Cable Television

6610 Introduction to Electricity (C, L) 3
Introduces basic concepts behind electricity and electronics, including AC and DC basic theory.

6611 Fundamentals of Cable Television (C,L) 3

Discusses basic principles behind cable television, including financial aspects, design theory and how systems operate.

6613 Introduction to Public Relations (C) 3
Introduces techniques used to promote not only company but the individual within the company structure.

6614 AC-DC Circuits (C, L) 3
Discusses AC-DC theory from a circuit level, with emphasis on cable applications.

6615 Rules and Regulations CATV (C) 3
Covers regulations affecting operation of a cable company, with emphasis on FCC rules and regulations.

6620 System Design (C, L) 3
Prerequisites: 6610, 6611

Involves general overview of CATV systems, including trunks, distribution systems and subscriber drops; also basic system parameters.

6621 Basic Residential Construction (C, L) 3
Introduces hardware used in residential construction, including active and passive devices and support and entrance equipment.

6622 Cable Methods and Splicing (C, L) 3
Introduces cable handling methods and preparation for fittings; also cable characteristics.

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Heating, Air Conditioning And Refrigeration

7112 Heating Fundamentals (C, L or S) 3

Studies fundamentals applicable to the heating phase of air conditioning, including types of units, parts, functions and application, plus combustion process, heat flow, temperature measurements and basic control devices.

7113 Basic Electricity for Air Conditioning 3 (C, L)

Studies basic electricity, including theory of current flow, Ohm's Law, current, voltage and resistance measurements, proper use of electrical measuring instruments; also switching circuits, magnetism, transformers, fusing and wire sizing; series, parallel and combination circuits and an introduction to pictorial and schematic wiring diagrams.

7114 Basic Mechanics and Shop Techniques 2 (C, L)

Introduces safe and proper use of tools and torches used to install tubing, piping and bend conduit; also includes selection of proper materials for specific application to soldering, brazing and basic gas welding.

7123 Air Conditioning and Refrigeration Fundamentals (C, L or S) 3

Introduces study of compression system used in mechanical refrigeration and air conditioning, including compression cycle, compressors, receivers, evaporators, condensers, metering devices, refrigerants and their identification, temperature conversions, absolute temperatures, gas laws and an introduction to basic mechanical service procedures used throughout the industry.

7124 Heating Service: Gas and Oil 3 (C, L or S)

Studies gas and oil heating units for residential applications, including method used in analyzing mechanical and electrical problems on residential equipment and pictorial and schematic diagrams applicable to residential heating units.

7125 Motors and Motor Control (C, L or S) 3

Studies various types of motors, including single phase capacitor start, capacitor start and run, shaded pole, tap wound and 3-phase; introduces procedures to select proper motor for a specific application and diagnosis of motor problems, with emphasis on motor control protective devices.

7126 Air Conditioning and Refrigeration 3 (C, L or S)

Continues air conditioning and refrigeration fundamentals, with in-depth study of compressors, condensers, receivers, metering devices, evaporators; also continues basic mechanical service procedures used throughout the industry.

7127 Heating Service: Electric and Hydronic 2 (C, L or S)

Studies various electric and hydronic heating systems used in residential applications and methods used in analyzing electrical and mechanical problems in residential heating units, including study of control systems, and pictorial and schematic diagrams.

7133 Cooling Service: Electrical (C, L or S) 3

Studies service procedures relative to residential air conditioning systems and low voltage (24 volts) control wiring, with emphasis on schematic and pictorial wiring diagrams applicable to residential systems; also studies capacitors, relays, protective devices; starters, contractors and pressure switches.

7134 Cooling Service: Mechanical (C, L or S) 2

Continues 7133, covering troubleshooting along with proper procedures used to clean up a system after compressor burnout; stresses importance of suction and liquid line filters and strainer-dehydrators.

7135 Electrical Circuits and Control 3 (C, L or S)

Covers electrical controls, gas control, oil control, cooling controls and system controllers; includes operation of individual controls and how they are integrated into control systems.

7136 Psychrometrics (C, L) 3

Studies methods used in estimating heat loss and heat gains in commercial and industrial work plus use of psychrometric chart in calculating air qualities and quantities, with emphasis on selection of equipment, coil sizing, blower sizing and duct sizing; includes study of ventilation systems.

7137 Heat Loss and Gain Calculation (C, L) 3

Studies methods used in calculation heat loss and gain in sizing units for residential application, including methods used to reduce energy consumption in residences.

7143 Blueprint Reading (C) 3

Emphasizes reading blueprints common to the trade, including floor plans, elevations, sections, details, plot plans and mechanical plans, including making tracings of blueprints and developing layouts of air conditioning

systems, using symbols, notation and schedules on drawings and learning proper lettering techniques and neatness and clarity in drafting in a specialized course for heating and air conditioning students.

7144 Commercial Refrigeration (C, L or S) 3

Studies light commercial air conditioning and refrigeration systems, including medium and low temperature applications; also studies refrigeration accessories, metering devices and mechanical and electrical controls, plus introduction to electrical and hot gas defrost systems.

7145 Heat Pump Service (C, L or S) 3

Studies heat pumps used in residential application, including various types of systems and system control, balance points, C.O.P. ratings and pictorial and schematic diagrams.

7146 Cooling Service: Advanced (C, L) 3

Continues cooling service, studying methods of troubleshooting electrical and mechanical components used in central air conditioning systems.

7147 Uniform Mechanical Code (C) 4

Studies the uniform mechanical code.

7153 Commercial Refrigeration: Advanced (C, L or S) 3

Continues Commercial Refrigeration I, including work with heavy commercial equipment, with emphasis on metering devices, accessories and advanced control arrangements; stresses trouble diagnosis and safety precautions in dealing with refrigerants and heavy equipment.

7154 Duct Fabrication and Installation (C, L or S) 3

Studies layout of duct work and fittings and fabrication of these parts from students' layouts, including proper use of hand tools commonly used in sheet metal trade and shop equipment necessary to fabricate ductwork and fittings.

7155 Specifications and Estimating (C, L) 3

Concerns job and equipment specifications and engineering data, with students using blueprints and specifications to "take-off" a job to arrive at costs of materials and equipment; includes methods of estimating labor costs and business principles such as overhead, job-related costs, labor cost plus fringes, warranty coverages, taxes, permits and subcontracts; also mark-ups and margins, estimation of service contracts and maintenance contracts and AIA documents.

7156 Energy Management and Balancing (C, L or S) 4

Studies energy consumption (electricity, steam, gas, oil, coal) in buildings and methods that decrease cost of operation, including proper construction and insulation, proper zoning and control, programmed night and off-times setback, control of exhaust fans and take-up air units, proper control of heating and air conditioning systems, heat reclamation units of various types and energy-conserving exhaust hoods; also overall building energy control layouts and retrofitting of existing heating and air conditioning systems.

7157 Solar Heating and Cooling (C, L) 2

Studies magnitude of energy available from sun and various methods of collecting and how to use and store for heating and cooling work; covers space heating and cooling, domestic and commercial hot water heating and swimming pool heating; air systems and water systems will be designed, with components selected, including collector cells, pump sizing, pipe and duct sizing and design of distribution systems; controls will be applied to the systems, with study of operation costs and savings.

7158 Absorption Air Condition Systems (C, L) 2

Studies absorption cycle as used in cooling work, including ammonia-water and lithium-bromide cycles, types of units, arrangements, parts, function of various parts and applications of units into air conditioning systems, plus diagnosis of service problems.

7159 Practicum (L or S) 1-15

Provides extended practice and skill development opportunities directly related to one or more specific courses.

7162 Specialized Environmental Systems (C, L or S) 3

Studies special systems encountered in the field, including heat pumps of all types, solar systems, electro-hydrronic systems, heat conservation and heat recovery systems; students design temperature-and-humidity control systems, becoming familiar with proper design and sizing of refrigerant piping, cooling tower piping and chilled water-hot water piping.

7163 Air Distribution System Design (C, L) 3

Studies methods used to size duct work for residential applications, making working drawings of duct systems; also studies various types of duct systems used in residential applications.

7165 Advanced Electrical Controls (C, L or S) 3

Studies control systems beyond ordinary residential and single-zone commercial jobs, including electronic

and solid-state controls, zoning control, modulating controls and sequencing controls used in larger systems, refrigerant flow and low-ambient controls and heat recovery and economizer arrangements.

7174 Service Organization and Management (C, L) 3

Covers operation of service department, including simulation of taking service calls and dispatching servicemen, personnel recruitment and training, truck maintenance, stocking and routing, including proper handling of service tickets, pricing procedures and collection practices; also warranty service returning in-warranty parts and procedures, service department overhead items, customer relations, advertising costs and service contracts.

7175 Equipment Sales (C, L) 3

Studies sales techniques and procedures, profession of sales-engineering, role of manufacturers and representatives, marketing and product services; students will write quotations and proposals, formulate and write service contracts and study compensation plans for salesmen.

7176 Applied Design (C) 4

Provides students opportunity to integrate and use knowledge gained to design complete air conditioning systems; students also analyze a given job, calculate heat losses and gains, select equipment, layout distribution systems and make working drawings, and calculate operating costs and maintenance costs.

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Industrial Maintenance

7330 Practicum (P) 1-15

Provides extended practice and skill development opportunities directly related to one or more specific courses.

7331 Industrial Machinery Electrical Circuits (C, L) 3

Studies fundamental single phase and 3-phase alternating current, including parallel circuits, resistance, inductance, switching, fusing, current requirements, transformer applications and motor control, as applied to typical machinery diagrams through discussion of design, wiring techniques and fabrication of wiring on machines.

7339 Machine Diagnosis and Repair

(Electrical) (C, L) 3

Studies troubleshooting electrical control circuits, with emphasis on quickly locating section of circuit containing component trouble and determining which component is defective; includes relays, heaters, motor control switches and timers.

7340 Machine Diagnosis and Repair (Mechanical) (C, L) 3

Covers skills commonly used to produce new and reconditioned mechanical parts for machines under repair, with emphasis on safety precautions when working on instruments; includes calibration techniques and repair of electro-mechanical devices, specialized practice in computation for industrial machinery, gearing, leadscrews, ways, couplings, bearings, dovetails and clutches.

7341 Basic Hydraulic and Pneumatic Principles (C) 3

Covers fundamentals of fluid power and components, including principles, function, terminology and application, with study of machinery circuits used to make application.

7342 Hydraulic and Pneumatic Systems and Repair (C, L or S) 3

Prerequisite: 7341

Presents understanding of hydraulic and pneumatic systems design, stressing proper use of tools to repair and troubleshoot hydraulic and pneumatic systems; includes hydraulic and pneumatic valves, oils, gauges, fittings, hoses and other components.

7343 Preventive Maintenance (C, L) 3

Stresses need for preventive maintenance for industrial equipment, including lubrication, maintenance and inspection records; what effects temperature, moisture and corrosion have on stored parts, and what effect speeds, feeds, machine loads and gearing have on preventive maintenance.

7344 Power Plant Mechanics I (C) 3

Reviews power plant mechanics for those qualified for advanced study in this field.

7345 Power Plant Mechanics II (C) 3

Continues 7344.

Surface Mining Operations

- 7610 Introduction to Coal Mining (C, L) 5**
Introduces coal mining fundamentals, with emphasis on safety and management, geological factors affecting coal formation, coal resources of the US and different methods of mining coal; includes brief introduction to subjects covered in detail throughout entire course and tours of surface mines in local area.
- 7611 General Physical Geology (C, L) 5**
Studies fundamentals of geology and geological history of North American continent with emphasis on Mississippian and Pennsylvanian periods; includes study of sediments and sedimentary rocks, especially those allied with coal beds, and features field trips in the local area.
- 7612 Surface Mining Machinery (C, L) 4**
Studies basic concepts of operation of surface mining machinery, familiarizing students with all types; includes group reports and visits to area plants, with emphasis on recognizing structural defects and preventing hazardous operation; also maintenance, life expectancy, operator skills and required training.
- 7620 Mining Regulations (C) 5**
Studies Surface Mine Law, including Part 77 of Federal Register, and coal mining laws of Indiana, Illinois and Kentucky.
- 7622 Mine Maps and Surveying (C, L) 4**
Presents working concept of mine maps and basic knowledge and technique of surveying with applications to mine uses, including taping, profile leveling, cross sections earthwork computations and transit stadia and transit-tapes surveys.
- 7623 Elements of Reclamation (C, L) 4**
Includes discussions of theory of land reclamation with specific application to surface mining industry; basics of reforestation, and types of grasses and legumes in different geographical areas; existing federal and state regulations with theoretical possibilities of future regulations; stresses importance of production and reclamation as a working unit.
- 7625 Surface Mining Field Study I (P) 6**
Complies with policy definitions of Cooperative Education as defined in "Curriculum" section of the college catalog.
- 7626 Surface Mining Field Study II (P) 6**
Continues 7625.

- 7630 Surface Mine Hydraulics (C, L) 4**
Covers fundamentals of fluid power and components, including function, terminology and use of mining equipment.
- 7631 Elements of Soil Management (C, L) 4**
Studies deposition of overburden, slope control, basic principles of soil control, with emphasis on principles of planning, use and effective management of varied soil materials; includes study of principles of vegetative survival through understanding of physical and chemical properties; investigates practical conservation practices.
- 7632 Surface Mine Equipment Operation (C) 4**
Studies practices and devices involved in extraction and transportation of coal, including equipment used in drainage, use of electric, hydraulic and compressed air power and coal preparation equipment and machinery.
- 7633 Principles of Welding (C, L) 4**
Presents practical use of oxy-acetylene and electric arc welding equipment, with students practicing cutting, bronze welding, fusion welding and hardfacing with oxy-acetylene flame.
- 7640 Blasting and Explosives (C, L) 5**
Includes instruction in specific details of care and use of explosives in accordance with mandated standards.
- 7641 Techniques of Operation Safety and Accident Prevention (C) 4**
Presents basic instruction for development of skills in speaking, listening and writing, including use and understanding of the *Bureau of Mines Dictionary of Mines*, safety films, wage agreements, forms and reports required by government agencies.
- 7642 Electrical Circuits and Systems (C, L) 4**
Introduces electrical principles of machine operation, including basic electricity, conductors and conductor sizes, magnetic circuits, coil polarities, and AC and DC motors.
- 7643 Economics of Mining and Cost Calculations (C) 4**
Covers fundamental economics and basic principles in business systems in everyday terminology, with emphasis on practical economics as opposed to theoretical; includes cost and pricing, competition, money systems, taxes and productivity.
- 7645 Surface Mining Field Study III (P) 6**
Provides extended practice and skill development opportunities directly related to one or more specific courses.

7646 Surface Mining Field Study IV (P) 6

Continues 7645.

7650 Coal Preparation Plants (C) 2

Covers purposes of coal preparation plants, including raw coal, plant processes, disposal of refuse and slurry, coal storage and loading and mechanics.

7651 Coal Sampling and Analysis (C, L) 3

Provides basic instructions, including limited laboratory training in approved methods of analysis of coal, particularly as related to bureau safety requirements.

7652 Labor Relations (c) 3

Studies in depth development of labor and management approach to operation of mining industry, with emphasis on proper and ethical procedures involved with personnel administration.

7653 Transmission Systems, etc. (C) 4

Studies applications of gears and gear drives, and mechanical advantage as related to transportation of coal.

7654 Mine Operational Planning (C) 4

Studies development of effective planning as related to day-to-day and long range, specific mining operations.

7660 First Aid Management (C) 4

Provides training by instruction and demonstration, with information disseminated regarding safe and unsafe practices with emphasis on reducing accidents as well as correct emergency aid for injured persons; familiarizes students with principles of mine rescue operations and actions to be taken by mine personnel.

7662 Coal Mine Supervision (C) 5

Provides basic introduction to management and related obligations, including principles of motivation, employee relations and management by objectives.

7663 Water Drainage and Water Pollution Laws (C, L) 5

Covers control of water in mining operations, including slurry ponds, pit drainage and acid seepage and study of federal EPA regulations.

Machine Tool

7710 Basic Machine Tool Introduction (C) 3

Studies theory of machine tool processes, care and use of hand tools, measuring devices, etc., with emphasis on basic drawing and understanding prints and lab safety features.

7711 Basic Machining

Fundamentals (C, L or S) 3

Uses simple bench work, sawing, filing, layout, drilling and reaming toward project completion, including applied mathematics and communications skills.

7712 Machining Fundamentals (C, L or S) 3

Introduces lathe, milling machines, shapers and drill press and their use as applied to related project assignments.

7720 Machine Tool Processing (C, L or S) 3

Studies fundamental machine shop requirements such as threads and threading, sine bar applications, dividing or indexing head; introduces lab assignments and sketches.

7721 Machine Tool Set-ups

and Operation (C, L or S) 3

Studies completed, hardened and ground v-block internal and external threads and use of the dividing head; includes applied mathematics.

7730 Advanced Machine Tool

Processing (C, L or S) 3

Covers nontraditional machining, including H.E.R.F. Laser, E.D.M. and E.C.M., with introduction to numerical control.

7731 Basic Print Reading (C, L or S) 3

Interprets machine shop symbols, stock lists, shop blueprints to dimensions, shapes, fabrication and assembly, with basic mathematics applied to solving print and performance problems.

7733 Advanced Machine Tool Set-up

and Operation (C, L or S) 3

Continues tool processing, including complete 5" sine bar and assembly, surface and cylindrical grinding, and applied mathematics.

7734 Advanced Print Reading (C, L) 3

Applies mathematics in solving shop problems related to die design and fabrication, special machinery, die casting, etc., including assembly drawings interpretation and ability to make sketches without shop instruments; simple motion device or progressive die will be designed.

7740 Specialized Machining Theory (C, L or S)	3	composition, basic injection mold design and machines and methods used to produce various plastic products with emphasis on injection molding methods.
Introduces jig boring, grinding, and procedures, plus rotary table, tracing practices, advanced machine tool processes in varied areas, including special projects, using specialized machine tools.		
7741 Basic Metallurgy and Heat Treatment (C, L or S)	3	
Studies fundamentals of thermodynamics and reactions that occur in metals subjected to various heat-treatment methods and techniques; use of gas and electric furnaces and their controls; heat treatment principles as applied to ferrous and non-ferrous materials; properties of metals and tests to determine uses; chemical and physical metallurgy, theory of alloys, treatment for steels, special steels and cast iron, powder metallurgy, classification of metals and applied mathematics and communications skills.		
7742 Specialized Machine Tool Application (C, L or S)	3	
Applies jig boring and grinding studies to advance project completion; includes math skills.		
7743 Specialized Machine Tool Application II (C, L or S)	3	
Applies differential indexing, gear cutting and cam milling; applies tracer design and application to project completion; includes required mathematics.		
7750 Tool Fabrication I (C, L or S)	3	
Studies accepted tool design, assembly and standards, with emphasis on basic blanking and piercing dies and their operations and components.		
7751 Tool Fabrication II (C, L or S)	3	
Consists of students developing acquired knowledge of progressive dies, transfer of motion and force, with fabrication and designing skills demonstrated toward assigned project completion.		
7760 Numerical Control and Automatic Processing (C, L or S)	3	
Introduces concept of automatic process control and fundamentals of feedback elements, transmission, control action, controlling elements as used in pneumatic, hydraulic and electrical systems; emphasis on relationship between digital devices and automatic process control system, special tooling techniques required, programming of tape controlled machines and applied mathematics required.		
7761 Plastics Molding Fundamentals (C, L or S)	3	
Studies basic materials and processes used in plastics technology, including types of mold tools, plastic		
7762 Precision Measurement (C, L or S)	3	Demonstrates process for linear and angular measurements, methods and techniques of applying precision measurements to the varied machine tool applications, including production and quality control.
7763 Grinding Technology (C, L or S)	3	Allows opportunity for familiarity with and proficiency in industrial application of grinding, including such operations as contour and radius grinding, ability to set and dress designed internal and external radius to within .005" with 90 per cent accuracy; includes identification of abrasives and structure of grinding wheels and proper care and use.
7764 Layout and Inspection (C, L or S)	3	Consists of students demonstrating skill of various layout materials and instruments, with interchangeability considered in relation to inspection procedures; includes applied mathematics.
7770 Practicum (L or S)	1-15	Provides extended practice and skill development opportunities directly related to one or more specific courses.
Pollution Treatment		
7913 Introduction to Environmental Control (C)	4	
Overviews the entire pollution problem relating each type of pollution, including water, air, population, solid waste, radiation and noise, and their relationships; also overviews the global environmental dilemma confronting mankind and man's impact on the environment.		
7915 Applied Chemistry I (C, L)	3	
Consists of intensified laboratory training program in proper performance of various chemical analyses for awareness of tests and procedures necessary to comply with state and federal wastewater effluent standards with tests including DO, BOD, COD, pH, suspended solids and chlorine residual, plus sampling technique and flow measurement.		
7916 Environmental Seminar (C)	1	
Presents papers and group discussions developing		

environmental awareness through intensive monitoring of all communications media.

7926 Applied Chemistry II (C, L) 3

Consists of intense laboratory training program in proper performance of various chemical analyses necessary to comply with state and federal water quality standards, including theory and laboratory techniques for alkalinity, hardness, turbidity, acidity, nitrates, ammonia, phosphates, grease and oil, cyanide and phenols tests.

7934 Basic Hydraulics (C) 4

Prerequisites: 8204

Familiarizes students with elementary engineering aspects of water supply and distribution and wastewater collection, removal and disposal, including introduction to study of closed conduit and open, channel flow, stream flow, runoff and pump characteristics.

7942 Applied Microbiology (C, L) 3

Consists of intense laboratory training program in areas of applied water and wastewater microbiology and microbiology of milk and food, including total and fecal coliform, total plate count, milk and food inspection.

7943 Water Supply and Treatment (C) 4

Prerequisites: 7926, 7944,
7935

Studies basic principles of water purification including coagulation, sedimentation, chlorination, treatment chemicals, taste and odor control, bacteriological control, mineral control design criteria, maintenance programs and operational programs; studies new processes and recent developments and features field trips.

7945 Equipment and Maintenance I (C, L) 3

Presents theory of basic electricity and electronics and in use and maintenance of laboratory equipment, instrumentation, electrical systems and motors, with emphasis of methods of troubleshooting and attitudes of safety.

7946 Applied Research I (C) 2

Consists of students researching an area of interest in air or water pollution field, presenting a paper about the research.

7951 Reporting and Purchasing (C) 2

Studies record keeping, reporting and purchasing practices necessary for efficient operation of an air or water pollution control facility.

7954 Plant Operations I—Municipal (C) 4

Prerequisites: 7926, 7934,
7935

Studies elementary engineering aspects of design, operation and maintenance of wastewater treatment plant, including design parameters for all processes, materials used and their purposes, type and operation of equipment, maintenance of plant and equipment and typical solutions to specific operational problems; features field trips and co-op training.

**7955 Management and Supervision
Procedures (C) 3**

Studies effective skills necessary to understand human motivation and behavior, with emphasis on improving individual attitudes, productivity and morale in working situations; includes hiring, orienting and dismissing employees, handling emergencies, maintaining operational control, specific aspects of public relations and image development.

7956 Applied Research II (C, L) 3

Consists of students researching an area of interest in air or water pollution, and presenting a paper regarding the research.

7957 Community Sanitation (C, L) 2

Introduces protection of health and promotion of human comfort and well-being through control of man's environment, including communicable diseases, solid wastes disposal, milk and food sanitation, disinfectants and insecticides, insect vector and rodent control, institutional sanitation and occupational health; features field trips.

7958 Equipment and Maintenance II (C, L) 3

Consists of lectures and "hands-on" type experience with use of maintenance of mechanical equipment, including pumps, valves, blowers, lift stations, feed systems, plant grounds, building and tanks, with emphasis on proper attitudes of maintenance and maintenance programs.

7960 Air Pollution Control I (C) 4

Prerequisites: 7926, 7942

Studies fundamentals of air pollution control including history of air pollution, effects, air pollutants and their sources, meteorology and air pollution, basic concepts in thermodynamics, air quality criteria, particulates, sulfur oxides, nitrogen oxides, hydrocarbons, photochemical oxidants, process types, industries and agencies, applicability of federal, state and local regulations, inspection and enforcement; features field trips.

7961 Plant Operations II—Municipal (C) 3

Studies special processes of advanced wastewater

treatment with emphasis on ammonia and phosphorus removal, carbon absorption, filtration, disinfection and coagulation.

7963 Plant Operations III—Industrial (C) 3

Studies special problems of industrial wastewater treatment, with emphasis on major classifications of liquid industrial wastes and their treatment, including neutralization, equalization, proportioning, removal of troublesome solids and cyanide and chromium treatment; features field trips.

7964 Plant Mathematics (C) 4

Prerequisite: 8204

Emphasizes problems involving wastewater processing and process control, laboratory and efficiency calculations, with special emphasis on proficiency in performance of basic mathematical skills and development of adeptness for treatment plant calculations.

7966 Hazardous Materials (C) 2

Prerequisites: 7925, 7935

Includes explosive, combustible, corrosive, toxic and radioactive substances in course designed to review basic chemistry of new and dangerous products of modern civilization.

7967 Occupational Orientation (C) 2

Develops environmental awareness through intensive monitoring of all communications media, with guest speakers and films introducing students to opportunities in environmental fields of wastewater, water, air, health, noise, etc., developing concern involvement, knowledge of environmental problems and career opportunities through group discussion.

7970 Air Pollution Control II (C, L) 3

Studies theory and laboratory techniques for ambient air quality sampling and source sampling including definition of air pollutants, sources and occurrences, sample collection, equipment used for collection, maintenance of laboratory equipment, calculation, and interpretation of results; features field trips.

7972 Environmental Administration (C) 4

Studies structure of present decision making, including federal, state, local governments and private sector, relative to the environment; introduces fundamentals of environmental law.

7973 NPDES Workshop (C, L) 2

Prerequisite: 7925, 7935

Consists of intensified laboratory training program in the proper performance of various chemical and biological analyses to develop the capability for compliance with state and federal water quality and effluent standards, with operators expected to attain skills

to competently conduct laboratory analyses for BOD, DO, chlorine residual, suspended solids, pH, fecal coliform and flow measurement and to maintain necessary equipment for these analyses.

7974 Phosphorus Removal Workshop (C, L) 2

Prerequisites: 7925, 7935

Designed to equip students with an awareness of importance of phosphorus removal and with skills to calculate amount of chemicals to be used, monitor point(s) of application of chemicals, effectively evaluate operating system for phosphorus removal, and conduct tests indicating efficiency of phosphorus removal; includes background information on basic design considerations for such removal systems, different chemicals available for phosphorus removal, maintenance of equipment involved, and record-keeping. Designed for operators and chemists of wastewater treatment plants requiring phosphorus removal, now or in the future.

7975 Basic Laboratory Skills (C, L) 2

Emphasizes development of basic laboratory skills including identification, care and use of laboratory equipment and glassware; also includes laboratory safety, sampling techniques, solutions and dilutions, ordering and maintaining an inventory of supplies and equipment.

7976 Metal Analysis Workshop (C, L) 2

Prerequisite: 7925

Consists of intense program in proper sampling and preservation techniques of samples for metal analyses, preparation of standard solutions, preparation of samples for analysis, and use of atomic absorption spectrophotometer.

Handwritten Note:
Welding

8001 Gas Welding, Brazing and Cutting (C) 2

Provides basic knowledge in oxyacetylene welding, with devotion to detailed study of techniques of making welds in all positions, with instruction in gas welding, brazing and flame cutting; provides additional background information essential to qualified gas welders through lecture and discussions.

8002 Gas Fusion and Brazing (S) 3

Concerns actual welding practice of the oxyacetylene welding process in all positions; includes brazing and cutting exercises.

8006 Basic Metallurgy (C)	3	8024 Blueprint Interpretation II (C)	3
Studies properties and uses of ferrous and nonferrous metals and alloys, production of iron and steel, composition and properties of plain carbon steel and alloying elements, selection of tool, case hardening, destructive and nondestructive testing; includes fundamentals of heat treatment and reactions that occur in metals subjected to various heat-treatment methods and techniques.			
8010 Arc Welding I (C)	2	8030 MIG Welding (C)	1
Covers welding in ferrous metals and alloys using shielded metal arc welding methods, including techniques in flat and horizontal positions and single pass and multipass techniques; also safety hazards and safe practices in arc welding.			
8011 Arc Welding I (S)	3	8031 TIG Welding (C)	1
Includes extensive welding practices on mild steel using various electrodes, with students limited to actual practices on making welds in flat and horizontal positions. Requires prior knowledge of oxyacetylene cutting procedures.			
8013 Blueprint Interpretation I (C)	3	8032 MIG Welding (S)	2
Studies basic fundamentals of blueprint interpretation as applied to welding trade, including metal structures, specifications and assembly drawings, interpretation of blueprints which show job applications and their relationships with specific attention given to special forms of dimensioning and section views.			
8020 Arc Welding II (C)	2	8033 TIG Welding Shop (S)	2
Covers welding of ferrous metals and alloys using shielded metal arc welding methods; includes techniques in vertical and overhead positions, and single pass and multipass techniques, with emphasis on safety hazards and safe practices in arc welding.			
8021 Arc Welding II (S)	3	8040 Welding Equipment Maintenance, Oxyacetylene and Arc (C)	2
Includes actual advanced welding practice, with students making welds in vertical and overhead positions with various types and sizes of electrodes; also single and multipass welds.			
8022 Electrical Fundamentals (C)	3	8041 Welding Equipment Maintenance Oxyacetylene-Arc (S)	1
Studies relationship between voltage, current and resistance in electrical circuits with emphasis on use of high-current transistors in AC circuits; includes special emphasis on production of heat as result of current flow through resistance.			
8042 Basic Fabrication (C)	1	Covers basic principles of layout and measurement used in fabrication of steel products, including tolerances, fits and allowances, with types of inspections related to fabricated steel products discussed.	

8043 Basic Fabrication (S)	2	8051 Welding Certification (C)	2
Involves construction of individual projects using metal products and other materials.			
8044 Welding Equipment Maintenance—Inert Gas (C)	2	8052 Welding Certification (S)	2
Covers thorough knowledge of various welding processes, particularly tungsten inert gas and metal inert gas welding, with emphasis on detailed study of techniques of making welds in all positions using TIG and MIG welding applications, plus lectures and discussions.		Prerequisites: 8011, 8021, 8032, 8033	
8045 Welding Equipment Maintenance—Inert Gas (S)	1	Includes actual welding qualification practices in shielded metal arc, TIG and MIG welding, with students satisfactorily completing course qualifying in at least one of the above processes.	
8046 Basic Mine Welding (C)	1	8053 Basic Pipe Welding (C)	2
Studies welding techniques and materials used in mining industry, including welding with low hydrogen electrodes and flux cored wire; prepares students for pre-employment testing as administered at mining operations and coal mine construction projects.		Covers welding of pipe with the SMAW process, techniques in all position welding and use of various electronics, plus joint design and fitup.	
8047 Basic Mine Welding (S)	2	8054 Basic Pipe Welding (S)	2
Involves lab exercises using low hydrogen electrodes and flux-cored metal inert gas welding wire such as in most mining operations, with initial practice in all 4 welding positions; upon completion of first exercises, students make advanced weldments subject to guided bend testing.		Covers pipe welding, including multipass welding in all positions.	
8048 Occupational Safety and Health Act Of 1970 (C)	4	8055 Special Welding Processes (C, L or S)	1-3
Breaks down Occupational Safety and Health Act of 1970 to aid in understanding without having to read entire act; teaches about employer and employee rights and responsibilities, rules or standards that must be complied with, inspections by Compliance Safety and Health officers, violations, citations, penalties, variances, appeals, record keeping and state and federal safety and health programs, with each topic amplified in detail.		Concerns actual welding practices of various welding processes and techniques using advanced welding methods, machines and equipment.	
8049 Production and Resistance Welding (C) 1		8056 Plasma—Arc Welding (C)	1
Studies in depth use of both gas and arc welding in manufacturing and repetitive production operations, with emphasis on welding of pipe and resistance welding techniques.		Covers safety and preparation in setting up equipment for welding.	
8050 Production and Resistance Welding (S) 2		8057 Plasma—Arc Welding (S)	1
Emphasizes welding of pipe in fixed horizontal and vertical positions and resistance spot and projection welding on various thicknesses and types of materials.		Concerns preparation of students with basic skills and fundamental knowledge of plasma-arc welding in flat and horizontal positions.	
8058 Industrial Materials (C)		8058 Industrial Materials (C)	3
Studies internal stresses and deformation of elastic bodies resulting from external forces, using tables of properties of engineering material extensively; includes analysis of simple and combined stresses relative to properties of materials to meet functional requirements, laboratory work involving strength, hardness and durability of common industrial materials, and applied mathematics and communications skills.			
8059 Welding Troubleshooting and Inspection (C)	1	8059 Welding Troubleshooting and Inspection (C)	1
Studies evaluation of weldments, welding procedures and tolerances, plus joint design and alignment.			
8060 Welding Troubleshooting and Inspection (S)	1	8060 Welding Troubleshooting and Inspection (S)	1
Includes "hands-on" experience with actual practice of visual destructive and nondestructive testing of weldments, with review of correct welding techniques.			

8061 Shop Practices (S)	1-6	instruction and practice in study of working drawings and applications of understanding from print to working part, including views, details, interpretation of dimensions, signs and symbols.
8062 Advanced Shop Practices (S)	1-3	Covers basic details, techniques and theory of stamping dies, studying essential facts of cutting and forming operations to achieve desired results.
8063 Welding Practice for Auto Service (C, L)	3	Introduces basic welding with emphasis on safety and procedures as pertaining to automotive service area; includes special welding techniques required in auto service using materials common to the field.
8064 Welding Practice for Auto Body (C, L)	5	Introduces basic welding processes with emphasis on safety and procedures pertaining to automotive body repair area, including special welding techniques required in auto body repair area, using materials and common applications of this field.
8065 Welding Practice for Agricultural Equipment (C, L)	3	Introduces basic welding with emphasis on safety and procedures as pertaining to agricultural equipment area, including special welding techniques required in agricultural equipment using materials and common applications of this field.
8066 Introductory Welding (non-majors) (C, L)	3	Covers gas and arc applications for occasional users from other trade areas.
Apprentice Courses		
9412 Shop Mathematics I (C)	3	Consists of review including addition, subtraction, multiplication and division of whole and mixed numbers; covers fractions, decimals and percentage; uses practical industrial shop problems wherever possible.
9415 Mathematics and Blueprint Reading I (C)	4	Consists of review including addition, subtraction, multiplication and division of whole and mixed numbers; covers fractions, decimals and percentage; uses practical industrial shop problems wherever possible; also,
9416 Basic Diemaking I (C)	4	Covers basic details, techniques and theory of stamping dies, studying essential facts of cutting and forming operations to achieve desired results.
9417 Advanced Diemaking I (C)	4	Covers composition and characteristics of various plastics materials, studying design factors of compression, transfer and injection molds along with mold components, heating and cooling principles and application as applied to designing and maintaining a functional mold tool.
9421 Shop Mathematics II (C)	3	Includes linear and square measure, volumes, square roots, ratios and proportions, and an introduction to algebraic functions, sined numbers, grouping and axioms using practical shop math whenever possible.
9424 Mathematics and Blueprint Reading II (C)	4	Covers linear and square measures, volumes, square roots, ratios and proportions, and an introduction to algebraic functions, sined numbers, grouping and axioms; also study of mechanical blueprints and their relationship to the working piece; also covers advanced and somewhat complicated prints for parts, simple machines and tools.
9425 Basic Diemaking II (C)	4	Covers primary die components, including punches, punch plates, die blocks and strippers, as individual entities in addition to their function as part of the complete die.
9426 Advanced Diemaking II (C)	4	Studies more elaborate and involved than Basic Diemaking; including dieforms, draw dies, secondary operations, trim, notch, and shear dies.
9431 Shop Mathematics III (C)	3	Covers addition, subtraction, multiplication and division of monomials and polynomials, equations, factoring, fractions, fractional and literal equations, exponents and radicals, linear equations and quadratics using shop mathematics whenever possible.

9433 Mathematics and Blueprint Reading III 4
(C)

Deals with addition, subtraction, multiplication and division of monomials, polynomials, equations, factoring, fractions, fractional and literal equations, exponents and radicals, linear equations and quadratics using shop mathematics whenever possible; also, deals with particular form of blueprint reading applying to electrical trades, and all signs, symbols, abbreviations used on schematics.

9441 Shop Mathematics IV (C) 3

Studies definitions and descriptions of geometrical terms, axioms and theorems, explanations regarding propositions dealing with straight lines, triangles and circles, and applications to practical shop problems.

9450 Shop Mathematics V (C) 3

Includes definitions of the trigonometric functions, construction and use of tables, interpolation solutions of right triangles, and applications of trigonometry to practical shop problems; also, computations made with legs and functions of the angles.

9460 Mathematics VI (C) 3

Covers obliques by altitude construction method, laws of sines, cosines and co-tangents, $\frac{1}{2}$ angle formula and tangent law, with emphasis on shop and shop design type problems.

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